DIV. OF FISHES

COMMERCIAL FISHERIES REVIEW

Vol. 16, No. 11 NOVEMBER 1954

FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

FISH AND WILDLIFE SERVICE
JOHN L. FARLEY, DIRECTOR

COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BRANCH OF COMMERCIAL FISHERIES

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Mailed free to members of the fishery and allied industries. Address correspondence and requests to the: Director, Fish and Wildlife Service, U. S. Department of the Interior, Washington 25, D. C.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, November 5, 1952.

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COVER: Vice President Richard Nixon (third from right on top of pilothouse) reviews parade of decorated San Pedro purse seiners on October 10 during colorful Eighth Annual Fishermen's Fiesta at San Pedro, California. The Vice President spent most of the day visiting the commercial fishing facilities in the San Pedro Harbor and Terminal Island. He climaxed the day with his review of the tuna and sardine purse-seine fleet of approximately 125 vessels.

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TUNA FISHING AT AMERICAN SAMOA, JANUARY-APRIL 1954

By Wilvan G. Van Campen*

BACKGROUND

In 1949 a company known as Island Packers, Inc., headed by Harold Gatty and financed by the Rockefeller interests, installed a small, modern tuna cannery in some former Navy buildings on the north shore of Pago Pago Bay, Tutuila Island, American Samoa. Attempts to supply this cannery with tuna by live-bait fishing and purse seining in Samoan and Fijian waters failed completely, and the plant was never

Fig. 1 - Japanese tuna boats and Samoan canoes in Pago Pago Bay. The tuna cannery occupies the right hand row of four buildings on the far side of the bay, with the supervisors' quarters at the extreme right.

operated except for 2 trial runs of about 3 tons of fish each. In 1952 the Department of the Interior, in the hope that the plant might somehow eventually make a contribution to Samoa's economy, purchased it to prevent its being dismantled and sold abroad. The Government first offered the cannery for lease in October 1952, but there were no bidders at that time. In May 1953 the Commissioner of Customs ruled that fish caught by foreign vessels could be landed and processed in American

* Translator, Pacific Oceanic Fishery Investigations, U. S. Fish and Wildlife Service, Honolulu, T. H.; and scientific observer in Samoa during the first phase of this operation.

Samoa and the product shipped to the United States without payment of United States tariff duties. When a second invitation for bids was issued in July 1953, the Van Camp Sea Food Company, Terminal Island, California, bid for and obtained a 1-year lease with an option to extend for 5 years.

On January 26, 1954, the salmon freezership North Star (1,642 tons gross), chartered by Van Camp from the North Star Fisheries Company of Seattle, rendezvoused at Pago Pago with a fleet of seven Japanese tuna boats, all under contract to a Japanese wholesale and export firm, Tokyo Marine Products, Inc. (Tokyo Suisan Kogyo K. K.). The fleet comprised 3 steel boats of around 150 tons gross and 4 wooden boats of about 100 tons gross. Only one of these was a specialized tuna long liner, the other six being primarily live-bait boats ordinarily engaged in pole-and-line fishing for skipjack and albacore in Japanese waters, and long lining only during the winter as an off-season occupation.

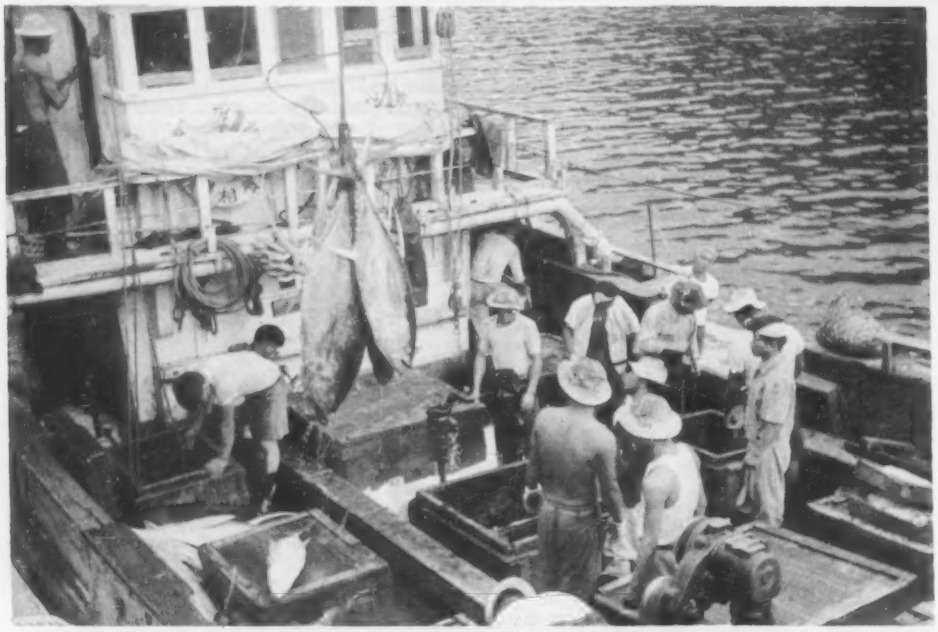

Fig. 2 - Bringing up tuna from the deck of a Japanese fishing boat to the United States freezership North Star, Pago Pago Bay, American Samoa.

The North Star remained in Pago Pago Bay until April 4, supplying the Japanese boats with ice, provisions, and part of their bait and fuel, and freezing the tuna brought in by them. The freezing of fish on the mothership went slowly, especially at first, and it never reached a high level of efficiency. Most of the time, using only 2 of the ship's 6 brine tanks, it took about 24 hours to freeze albacore and about 3 days to freeze large yellowfin.

On March 27 a second United States freezership, the Washington Star (649 tons), under charter to Tokyo Marine Products, arrived in Samoa to take over the duties of mothership, and on April 4 the North Star sailed for San Pedro with about 405 tons of frozen tuna. The fishing boats departed for Japan between March 30 and April 21, except for one with serious engine trouble which did not leave until May 10. The last day on which any fishing was done was April 11. The Washington Star sailed for Japan with a cargo of frozen marlin in the latter part of April.

The cannery was operated from February 8 until March 4, during which period it took mainly very large yellowfin tuna not considered worth exporting to the United States because of the operators' belief that such fish show a high incidence of dark-

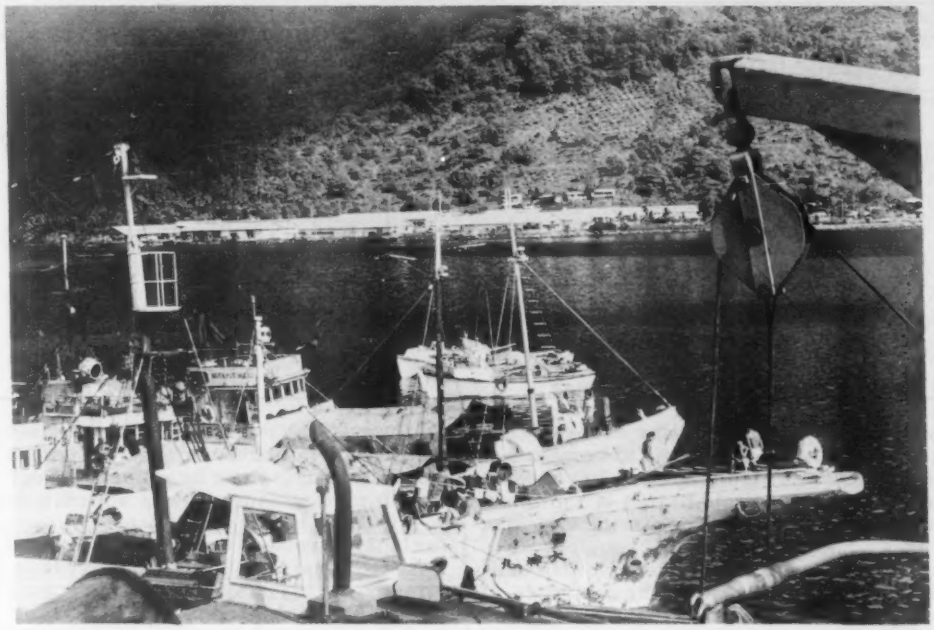

Fig. 3 - Japanese tuna boats alongside the North Star in Pago Pago Bay, with salmon gill-net boats in the middle background and cannery buildings across the bay.

colored and "green" flesh. The cannery ran again for 3 days early in April, when 3 of the fishing boats brought in fish after the North Star's departure.

PRODUCTION

The fishing produced a total catch of some 583 tons of tuna; 444 tons of yellowfin, 131 tons of albacore, and 8½ tons of big-eyed and skipjack (table 1). The spear-

Table 1 - Tuna Landings at Pago Pago, American Samoa, by Species and Months, January 27 to April 14, 1954

Species	Month				Totals
	January	February	March	April	
	(Pounds)				
Yellowfin	136,838	362,483	349,956	38,535	887,812
Albacore	28,920	117,188	85,900	29,821	261,829
Big-eyed	186	6,854	5,882	1,605	14,527
Skipjack	467	1,162	775	-	2,404
Total	166,411	487,687	442,513	69,961	1,166,572

fish catch, which was mostly black marlin, is estimated to have amounted to around 175 tons. Some 50 or 60 tons of this was lost through spoilage, a small quantity was sold locally as fresh fish, and the remainder was frozen aboard the Washington Star for shipment to Japan. Most of the fishing was done in the immediate vicinity of the main Samoan islands: of a total of 198 days of fishing for which positions were reported between January 26 and April 11, 125 days were spent in a 5-degree

(300-mile) square around the Samoan Islands. Three boats fished briefly in the Tonga area, two cruises were made to the waters north of Fiji, and there was scattered fishing at other locations (table 2). Because of the wide variation in the number of days of fishing in the several areas and the possibility that seasonal changes are involved, it is difficult to compare the areas in terms of abundance of fish. The average catch rates (fish per 100 hooks per day) in table 2 show no clearcut trend in the geographical distribution of the tunas except for the notably higher abundance of albacore in southern Tongan waters.

Table 2 - Number of Days of Fishing and Average Catch Rates (Fish Per 100 Hooks) Reported from Each 5-degree Square (Identified by the Coordinates of the Northeast Corner) from January 26 to April 11, 1954

Square	General Area	No. of Days	No. of Fish/100 Hooks	
			Yellowfin	Albacore
10° S. - 170° W.	Samoa	125	2.02	1.28
15° S. - 170° W.	Northern Tonga	19	1.83	1.94
10° S. - 180°	North of Fiji	15	1.33	2.78
10° S. - 175° W.	West of Samoa	13	1.76	1.31
10° S. - 165° W.	Rose Island and Manu'a	7	1.71	0.83
20° S. - 170° W.	Central and southern Tonga	5	0.63	6.52
15° S. - 175° W.	East of Fiji	4	3.18	1.80
15° S. - 180° W.	Fiji	4	1.20	1.50
00° - 170° W.	Phoenix Island	4	1.83	0.97
00° - 180°	North of Ellice Island	1	1.24	1.31
20° S. - 175° W.	West of Tonga	1	1.93	2.67

The abundance of both yellowfin and albacore, as reflected in the average catch rates of all vessels by 10-day periods (table 3), was moderately good during the first part of the operation, running around 3 fish per 100 hooks for either species in late January and early February, but this declined progressively until in the latter part of March the rates for both species were down to about 1. At best these catch rates are only mediocre in comparison with rates reported by the Japanese from other parts of the western Pacific, and they are decidedly inferior to the catch rates recorded in the equatorial central Pacific by U. S. Fish and Wildlife Service research vessels.

Table 3 - Average Catch Rates of All Vessels Reporting by 10-Day Periods

Period	Number of Fish Per 100 Hooks	
	Yellowfin	Albacore
January 20-31	3.62	2.32
February 1-9	2.22	1/3.27
February 10-19	2.37	1.89
February 20-28	2.49	1.46
March 1-9	1.91	1.42
March 10-19	1.69	1.12
March 20-31	1.11	0.80
April 1-9	1.01	1.92
April 10-19	1.15	0.33

1/Includes a few high-catch days of fishing in Tongan waters.

Table 4 - Average Weight of Yellowfin Tuna in Single Fares

Date Landed	Weight in Pounds	
	Gutted Fish1/	Round Fish
January 27	-	147.8
January 28	-	137.5
February 15	132.7	-
February 24	130.1	-
March 1	114.2	-
March 8	112.8	-
March 12	103.2	-
March 17	109.8	-
March 21	97.7	-
March 26	73.1	-
March 28	112.5	-
March 29	101.8	-

1/All yellowfin and big-eyed were delivered gutted and gilled after the first round of landings.

The apparent decrease in abundance was accompanied by a change in the size composition of the yellowfin catch. The average yellowfin weight dropped steadily from over 130 pounds in the early part of February to around 70 pounds in the latter part of March (table 4). In February, 70 percent of the yellowfin land-

ings were composed of fish over 120 pounds; in April only 24 percent were over that weight (table 5). This decrease in size, of course, lowered the "pay load" per day even more than is suggested by the drop in the numerical catch rates.

Table 5 - Percentages of Yellowfin Tuna over 120 Pounds (Gutted)

Period	Percentage over 120 Pounds
February	70
March 1-14	51
March 15-31	39
April	24

The Japanese fishermen advanced two hypotheses to account for the decline in the apparent abundance of fish: one, that there is a seasonal migration of tuna through Samoan waters, and that the early days of the operation chanced to coincide with this migration; and the other, that the fleet was exploiting a resident population of large fish, "home guards" that had settled down on the shoal areas around Samoa, and that this limited stock was severely depleted during the course of the operation. Only a continuation of fishing over the greater part of a year will show whether either of these notions is correct. It might be noted that in the first part of April, when there were no indications that the fishing had recovered around Samoa, one boat fishing off to the north of Fiji enjoyed fairly good albacore catch rates (3 to 4 fish per 100 hooks).

Sharks, usually an important element in the catch of Japanese tuna long liners, were not brought in by the boats since there was neither storage space nor transportation available for them. They seemed to be generally scarce in the waters fished by this fleet, and available data show shark damage to only about four percent of the tuna on the lines. The catch of tuna species other than yellowfin and albacore and of spearfishes other than black marlin was negligible.

All fishing was done with cotton long lines of standard Japanese design. The gear all had 5-hook baskets, typically with 180 fathoms of main line, a 13-fathom float line, and 12-fathom branch lines. The average number of baskets set per day by each vessel was about 290 and the maximum was 330. Setting was done between 0400 and 0800 hours, at the rate of 1 basket every 45 seconds, and the hauling of the gear took from around 1100 to 2100 hours or later, at the rate of 2 minutes per basket. Crews were 23 to 28 men, except on one of the large steel boats which carried 32.

Counting from the time when they first came alongside the North Star (complete records on the fishing done before that time are not available), six of the boats made four trips apiece and the seventh, which arrived late, made only three. The number of days fished per trip ranged from 3 to 12, the average being $7\frac{1}{2}$. For a total of 203 days of fishing included in this reckoning, the average daily catch was 1.70 tons of yellowfin and .53 ton of albacore.

One vessel fishing in Tongan Waters below 20° S. latitude early in February reported albacore catch rates as high as 8 and 9 fish per 100 hooks, and the albacore from that cruise averaged 50 pounds in weight as compared with an average of about 42 pounds in Samoan waters. Yellowfin were scarce that far south, however, and no further fishing was done there, either because it was more profitable to fish for heavy yellowfin farther north, or because the boats could not obtain the quantities of ice deemed necessary for such long trips.

SMALL BOAT EXPERIMENT

The North Star's complement included four experienced halibut fishermen, who were to make a trial of tuna fishing from 30-foot gasoline-powered motor boats of the type used for fishing salmon gill nets in Bristol Bay. Trolling was given a very brief trial from these boats at first, but with no success at all, and then imported ready-made Japanese long lines were fished, the main lines being reeled in on the hydraulically driven gill-net drums. Hauling by this method was so slow that a boat

could operate only about 30 baskets of 4-hook gear per day; that boats were not suitably built nor equipped to work on the open waters of the tropical Pacific; and there were repeated mechanical breakdowns. From January 30 to February 25, when the experiment was abandoned, sporadic fishing by two boats (four men) put a total of 5,756 pounds of tuna aboard the North Star.

LOGISTICS

The major necessities of a Japanese long-liner fleet are ice, frozen bait, rice, and fuel. The motherships North Star and Washington Star undertook to supply the first three, which were practically unobtainable in Samoa, and also as much as possible of the fuel oil, as this was selling at Pago Pago for 14 cents a gallon plus a 3-cent-per-gallon handling charge (later waived under a retroactive agreement). The North Star brought 30,000 gallons of fuel from Seattle for the catcher boats, and when this was used up local supplies were drawn upon.

None of the fishing boats had any mechanical refrigeration, and only one of them, the sole specialized long liner, had any insulation on its fish holds; consequently ice in large quantities was essential to their operations. It is the customary practice of Japanese live-bait boats to leave their fish in the round and hold them in ice water rather than gut them and pack them in crushed ice, as is done on regular long-line boats. This ice water method requires about 1 ton of ice per day for each hold containing fish, and since a Japanese live-bait boat typically has 9 or 12 small fish holds (some of which double as bait tanks), ice consumption is very high. One of these boats will take 50 tons of ice for a 2-week trip. One of the regular long liners, working with a Japanese mothership, would require only about half that much ice. As evidence of this, the one specialized long liner working in Samoa, a 100-ton wooden vessel with three cork-insulated holds, was the only boat in the fleet that brought in a tonnage of fish greater than the tonnage of ice it consumed.

The North Star brought to Samoa 800 tons of ice in 400-pound blocks, which was all that could be loaded into her. A flake-ice machine mounted on the ship worked sporadically at a maximum rate of about 4 tons per day and contributed perhaps 160 tons in all. The 2 tons a day produced by the Samoan Government ice plant, except for the small quantities required for domestic purposes, was brought up and stockpiled by Van Camp Sea Food Company as a reserve supply and amounted to about 75 tons by the time the operation ended. The Washington Star brought from Honolulu 292 tons of ice in 300-pound blocks, arriving just in time to take over the task of icing the catchers for their trip home.

The Washington Star suffered heavy storm damage between the West Coast and Hawaii, and had to spend a whole month undergoing repairs in Honolulu. This made the date of her arrival with the supplementary ice supply uncertain, and measures had to be taken to stretch the obviously inadequate supply in the North Star. These measures took the form of an order to the fishing boat captains to bring in their fish packed in crushed ice rather than in ice water, and a rationing of ice deliveries to the boats at the rate of 30 tons per trip.

Before the arrival of the North Star, the fishing boats that had fish aboard bought small quantities of ice from the government plant at the usual price of $20 a ton (Van Camp was later able to get this price cut in half for its bulk purchases). If this ice is counted in with that brought by the North Star and the flake ice made on the ship, it appears that in round figures nearly 1,000 tons of ice was used to produce less than 600 tons of tuna (leaving marlin out of consideration).

The bulk of the bait for the operation was 25 tons of frozen Japanese saury, shipped to Seattle expressly for this expedition and carried to Samoa aboard the North Star. The mothership also carried 10 tons of American herring, the Washington Star brought another 15½ tons of herring, and the fishing boats brought some saury

and a small quantity of sardine from Japan. There was no shortage of bait; indeed, the problem was to find satisfactory storage for it all. The poor catches made by some boats toward the end of the operation were blamed by some fishermen on the deterioration of their bait in storage. Saury was the preferred bait, and practically nothing else was used until the very end of the operation, when some boats that had used up their share of the saury took herring for the trip home.

The North Star carried 30 tons of rice and the Washington Star 10 tons. Both vessels also carried frozen vegetables and cigarettes for the fishing boats. The catchers supplied their own miso, soy, and other Japanese staples, and the fishermen traded fish for local produce, which is limited to such things as taro, breadfruit, bananas, and coconuts. Imported foodstuffs are high-priced and in poor supply at Pago Pago.

Berthing space in Pago Pago Harbor was just barely adequate for the fleet. The freezerships berthed at the Oil Dock and the fishing boats generally berthed at the Customs Pier. These berths are across the bay from the cannery, and all fish sent

Fig. 4 - Salmon gill-net boats at the Oil Dock, Pago Pago Bay, rigged for tuna fishing with trolling outriggers and with long lines reeled up on the net drums.

to the plant had to be trucked about 3 miles around the head of the bay. The cannery has two rather dilapidated small (50 x 22 feet) piers, one of which is being put into condition for use. There are no facilities capable of drydocking a tuna boat anywhere closer than Fiji. The docks at Suva are said to be quite adequate and the service reasonably inexpensive, but there is a great demand for the facilities and dock time must be reserved well in advance; in addition there are, of course, some formalities and attendant delays in the case of a foreign vessel. The government shops in Pago Pago are equipped to handle minor repair jobs, but major breakdowns can be taken care of only with difficulty.

CANNERY

The cannery is located at Atu'u, across Pago Pago Bay from the largest town and seat of the Government of American Samoa. It is a well-equipped modern plant, with two packing lines and a capacity estimated at between 20 and 25 tons of tuna or 1,000 cases of the finished product per day. The largest amount of tuna sent to the plant on any one day during this operation was about 16 tons, and the average day's run was 7 to 8 tons. Almost all of the tuna sent to the cannery was yellowfin over 120 pounds, which was packed as chunk style, unless it was of darker color, in which case it was grated. Small experimental lots of other styles were packed, and in the last 3 days of operation considerable quantities of albacore were received and put up as fancy solid pack (table 6).

Table 6 - Fish Received by the Cannery by Months

Species	February	March	April	Totals
		(Pounds)		
Yellowfin, gutted	156,711	108,621	38,535	303,867
Yellowfin, round	42,599	-	-	42,599
Albacore, round	274	-	29,821	30,095
Big-eyed, gutted	2,483	1,639	1,605	5,727
Skipjack, round	365	40	-	405
Totals	202,432	110,300	69,961	382,693

The cannery has three Freon-refrigerated cold-storage rooms estimated to have a total tuna storage capacity of 60 tons. During this operation they were used for holding bait and provisions, and no tuna was stored in them. Construction of a flake-ice plant at the cannery was started in the middle of March and the plant was to go into operation in May. It has an ice-storage room of about 40 tons capacity insulated

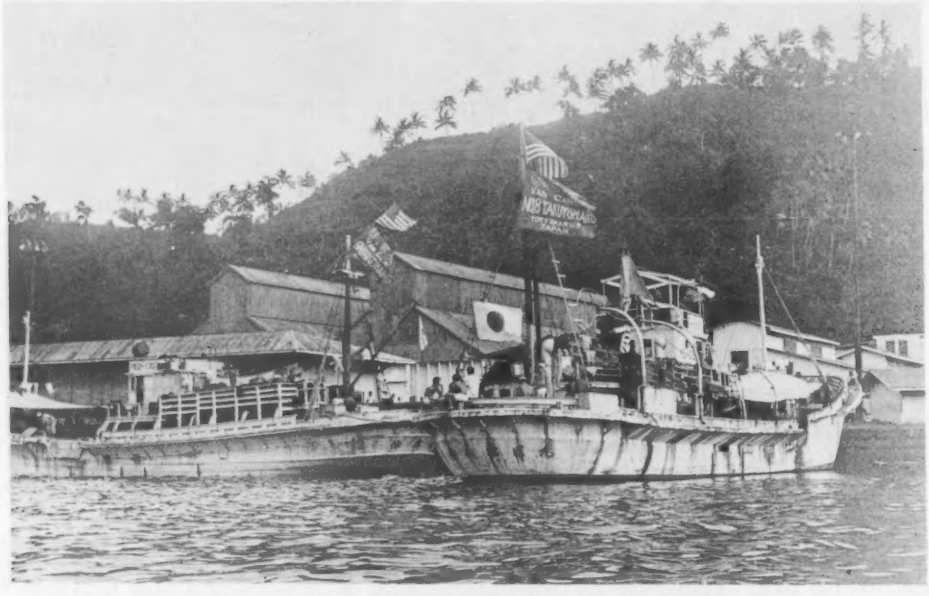

Fig. 5 - Japanese tuna boats at the Customs Pier in Pago Pago Bay, American Samoa, February 1954.

with aluminum foil and employs one belt icer operating off a $7\frac{1}{2}$" x $7\frac{1}{2}$" compressor and the flake-ice machine transferred from the North Star with two 6" x 6" compressors. Eventual installation of a 180-foot screw conveyor to carry the flake ice to the cannery pier is planned.

The cannery employed eight persons brought from the United States mainland in supervisory positions and about 160 local people, slightly more than half of them women occupied in cleaning and packing the cooked fish. Wage rates are in conformity with the scale used by the Government of American Samoa, which cooperates in the procurement of labor for the cannery. The Samoan workers were quick to learn their tasks and appeared reasonably efficient. In this connection it should also be noted that the agreement between the Samoan Government and the lessee provides that steps are to be taken to train Samoans in tuna fishing with a view to eventually using only local personnel in the production as well as in the processing end of the enterprise. No such training was undertaken during the period covered by this report.

Because of the large size of the long line-caught yellowfin, the cannery management anticipated considerable trouble with "green" and otherwise off-color fish. The actual occurrence of meat colors unsuitable for canning as bite-size light meat was as high as 20 to 30 percent in some batches of big tuna, but it was quite variable, being nearly absent from some batches, and the correlation between fish size and incidence of undesirable meat color was far from perfect. In general, the opinion of the operators seemed to be that the 20-percent discount on the price of fish over 120 pounds in weight was adequate to cover loss from this cause. Most of the fish rejected on this ground for chunk-style packing was satisfactory for canning as grated tuna, particularly if blended with a suitable proportion of lighter meat. Indications are that the amount of cooked fish rejected outright was small.

CONCLUSIONS

The first phase of the experiment in operating the Samoan cannery with tuna from Japanese fishing boats demonstrated that (1) yellowfin tuna and albacore can be taken by long lines in the vicinity of Samoa, and (2) Samoan cannery labor can produce an acceptable pack of canned tuna. The economics of cannery operation in Samoa have not yet become clear. They no doubt depend on the apparent advantages of price and labor costs coupled with ready access to fishing areas around many island groups, from the yellowfin grounds along the equator to the possibly important albacore grounds below 20° S. latitude, as balanced against the logistical difficulties of working in this isolated, distant part of United States' Pacific territories.

The experiment is continuing. Reports from Samoa are that two more Japanese long liners began fishing out of Pago Pago in May, and another two in June. The operations of these vessels were reported to be going much more smoothly than those of the earlier, larger fleet. The fishing grounds continued for the most part to be within 50 miles of the main Samoan islands, and catches were at the level of 2 tons per vessel per day, about one-fourth of which was albacore.

SEAWEED MEAL FOR COWS

It is reported that when lactating cows were fed a supplement of 200 grams of seaweed meal (dried milled Ascophyllum nodosum) per day for a period of 3 weeks to a month, an increased fat production was obtained.

--Journal of Scientific and Industrial Research, June 1953.

RECENT DEVELOPMENTS IN FISHING-VESSEL DECK GEAR

By C. B. Carlson*

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Among other problems, the fisheries of the United States are faced with increasing shortages of skilled manpower. This is encouraging increased mechanization of fishing operations and improved performance characteristics of deck gear.

PUMPS FOR UNLOADING MENHADEN

Pumps have been used for many years in segments of the California sardine industry for transferring fish from a hopper alongside the vessel to the shore plant or processing ship. More recently pumps were introduced into the Maine sardine and the Atlantic and Gulf menhaden fisheries to transfer fish from the vessel's hold to

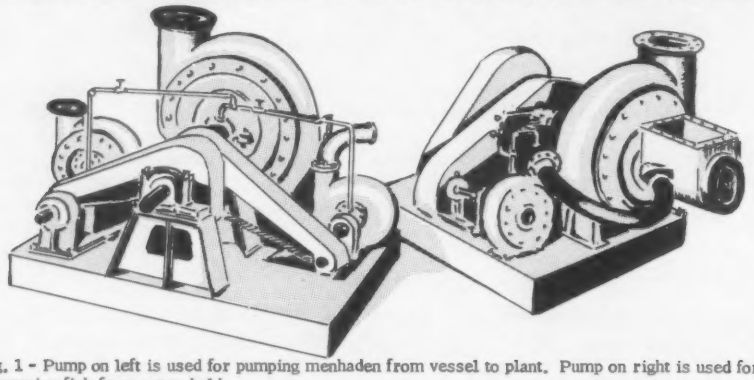

Fig. 1 - Pump on left is used for pumping menhaden from vessel to plant. Pump on right is used for pumping fish from net to hold.

the plant. Prior to using pumps in the menhaden fishery, the dry fish were shoveled by hand into a vertical conveyor for delivery to the measuring hopper. This was hard and undesirable work, and the labor shortage often proved to be a bottleneck in reduction operations. Furthermore, unloading was time consuming and on days when fish were plentiful units of the fleet might be tied up for 12 hours or more waiting to unload. With the introduction of pumps, a menhaden vessel can be unloaded in a matter of minutes. Either centrifugal or reciprocating pumps can be used for the shoreside operation. The menhaden vessels have a rectangular pipe with removable manhole plates built fore and aft into the bottom for the entire length of the hold. This terminates in a vertical pipe through the deck with a fitting for attaching an 8- to 10-inch diameter suction hose. The fish in the hold are wetted and sluiced to the manhole plates where they and the water are removed. When shoveling by hand, some fish were usually left in the hold and the wash down was inadequate. The use of pumps and large quantities of water for unloading have greatly reduced obnoxious odors and flies on the vessels and contributed to general cleanliness.

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Note: This paper was read and discussed, along with others, at the International Fishing Boat Congress (1953) at Paris, France (October 12-16, 1953); and Miami, Florida (November 16-20, 1953). All papers and discussions will shortly be published by Arthur J. Heighway Publications Ltd., 68 Victoria Street, London, S.W. 1, England.

PUMPS FOR BRAILING MENHADEN

The drying up of the menhaden in the fish bag and brailing the fish aboard the menhaden vessel is also a time-consuming and laborious task. The success of pumps for unloading at the dock led to testing their effectiveness for eliminating the brailing operation. Menhaden are caught by the two-purse-boat system and at least 10 men per boat are required to "harden" or dry the fish for brailing. When the catches are large, or the fish are "hard workers," it is almost impossible to harden the fish manually, and it may even be necessary to use a powered fall for assistance. Under these conditions the fish bag is likely to tear, resulting in the loss of most or all of the catch. The use of pumps greatly reduces the effort required to raise the fish because (1) it is not necessary to dry the fish to the degree required for conventional brailing and (2) the intake end of the suction hose can be lowered considerably below the surface and beyond depths that can be reached by a brailer. The saving in brailing time permits the making of additional sets.

Menhaden operators at Fernandina, Florida, believe the centrifugal type is more practical than the reciprocating type because of smaller space requirements. A very compact unit consisting of an 8- or 10-inch diameter main pump and a 2-inch diameter priming pump mounted on a single frame is now being manufactured for the industry. This same unit with the addition of a 5-inch diameter pump for sluicing the fish in the hold can be used for a shoreside installation to unload the vessels. Power is supplied to the main pump shaft by high-speed gasoline or diesel engines rated at 65 to 100 hp., and the auxiliary pumps are driven from the main shaft by sprockets and chain. Reinforced suction-type hose 8- or 10-inches in diameter and from 20 to 30 feet in length is used to carry the fish from the net to the pump. The hose is too heavy to conveniently manipulate by hand so a hand tackle or a powered single fall is used to govern its position. The intake end is fitted with 1/2-inch diameter iron bars in the form of a hemisphere to prevent the net from clogging, but the openings are sufficient to admit the fish. After leaving the pump, the fish and water are discharged on a screen consisting of 1/2-inch diameter bar irons at an incline of about 30 degrees to drain most of the water and to direct the fish to the hold. The separated water may either be discharged to the deck or piped overboard on the nonworking side of the vessel. Surplus water carried over with the fish is removed by the vessel's bilge pumps.

POWERED SEINE REELS IN THE SALMON FISHERY

The purse-seine fishery for salmon has long been considered highly efficient from a mechanized viewpoint because a crew of 8 or 9 men could haul a seine, over 300 fathoms in length and 25 fathoms in depth, 6 or 7 times per day. In the Alaska fishery 12 or 13 hauls per day, with a seine 200 fathoms in length and over 15 fathoms in depth, are not uncommon for a crew of 7 or 8 men. However, the recently introduced power reels, or drums, indicate 5 men can make up to 20 sets per day with a 300-fathom seine.

Salmon are caught by the "one-boat" method with the aid of a powered skiff. In established practice, as described by Carlson (1945), the seine is set and hauled from a turntable (mounted on the stern) which can be swung through a complete circle. The turntable is fitted with a roller which is powered to assist in hauling by friction between the net and roller and a clutch for free wheeling while setting. The seine is set over the stern and hauled over the side. Upon completing the circle, the purse lines--one from forward and the other from aft--are led through blocks on a davit amidships to the winch for power pursing. After the pursing is completed, the purse rings and lead line are lifted aboard. Meanwhile the cork line has been bunched on the working side of the vessel by men on the stern and in the skiff attached to the bow. When the turntable is in the hauling position, the cork line is piled on one side of the table over the stern; the lead, purse, and ring lines are piled on the forward side; and the netting laid between them. This arrangement permits the crew to

haul various portions of the seine according to preassignment and keeps the lead and cork lines well separated while setting.

By the new drum system (Anonymous 1953), the net is set and hauled from a fixed reel set in a tank in the stern. The net is set in a fairly straight line or an elongated hook and the circle may be completed by towing on one or both ends by either or both the fishing vessel and the powered skiff. The procedure depends on the type of set most advantageous for the locality and the behavior of the fish. When "pursing" or closing the bottom, only the forward purse line is taken to the winch while the after purse line and a portion of the seine are wound on the drum. The purse line finally becomes taut between the davit and the reel. The remaining purse rings are picked up on an elongated "U" iron or "clothespin" suspended in a near horizontal position by a bridle from the boom. As the net continues to be reeled on, successive rings slip off the clothespin as the lead and ring lines become tight. A proportionate length of purse line is paid through the rings to be reeled on the drum with the seine. No effort is made to keep the cork and lead lines separated as in conventional practice, but one of the problems is to reel the seine evenly and tightly so that it will not bind while being set. Before being wound on the drum, the seine passes over a horizontal roller 8 to 10 inches in diameter and then between a pair of vertical rollers mounted on a traveler controlled by hand through a level wind gear. The vertical fair lead rollers are about 8 inches in diameter and 30 inches high with a free space of about 10 inches between them. They are mounted on a hinge so they can be tipped inboard to avoid tearing the net while setting. The power skiff plays an important part in drum seining for one of its functions is to tow the vessel from the nonworking side to maintain proper fair lead of the seine for hauling. The drum system requires close coordination of the entire crew for the chances of fouling the gear on the rudder or propellor are increased.

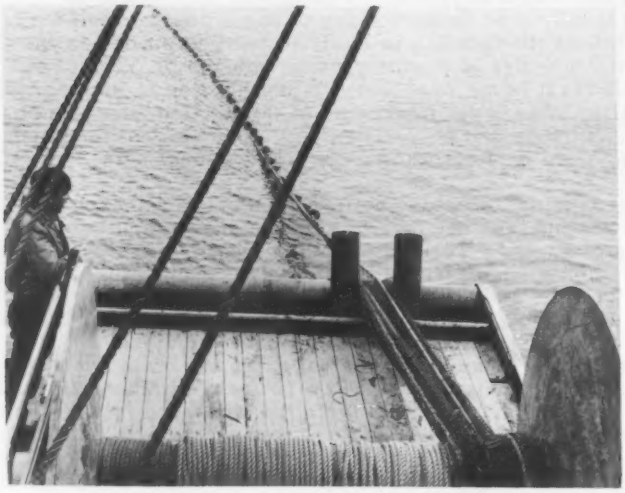

Fig. 2 - Taking in purse seine, shwoing drum, roller, and level wind device.

The drums are fabricated of steel and have ample capacity if the seines are tightly wound. The dimensions of the drum vary from 5 to 9 feet in diameter and wide enough to suit the space in the stern of the vessel and the volume of the seine. Reels now in use have a capacity from 225 to 400 cubic feet but one reel, measuring 9 feet in diameter by 10 feet in width with a capacity of 625 cubic feet, was to be installed on a Canadian purse seiner. The reels are set in a tank in the stern made watertight from the rest of the vessel but fitted with a self-bailing device to permit drainage. It would not be surprising if some enterprising fisherman devised a tight top for these tanks for additional fuel capacity for other fisheries where longer cruising range is required. Such tanks might also be made suitable for carrying live bait in the albacore tuna fishery.

The reels must be adequately and properly powered with variable speed running either forward or in reverse. When hauling it may be necessary to reverse the drum if it becomes evident that a "bind" is being made which will interfere with a subsequent set or to assist in starting the seine when a set is being made. Furthermore, the pursing strain may exceed 5,000 pounds line pull and variable speeds are required depending on the strain and the need to remove gilled fish or those caught in a "pocket." The drum must be free wheeling so that the seine can be set easily. A good brake must be provided to stop and hold the seine while it is in the water.

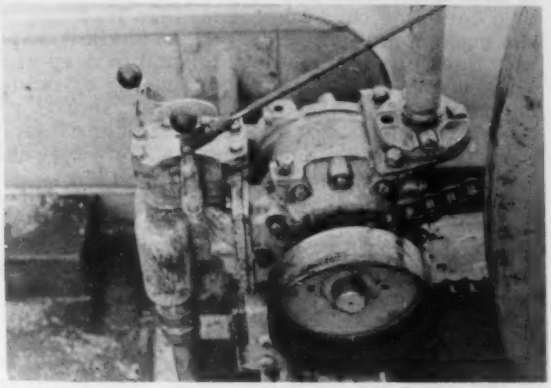

Fig. 3 - Hydraulic drive system on drum seiner Indiana. Rim of seine drum shows along right margin of photograph.

The reels are powered by either a hydraulic motor or a mechanical system. In the latter instance power is taken from the main engine and transmitted through a system of sprockets, roller chain, and shafting to a truck transmission short coupled to a truck differential and brake drum on the reel. Speed reductions up to 84 to 1 and reversing the reel are possible by this method. The hydraulic drive functions by oil under pressure from a pump through a reversible and free-wheeling hydraulic motor coupled by a chain and sprocket drive to the drum. Proponents of the hydraulic drive claim smoother and more positive control of the drum speed in either direction while exponents of the mechanical drive claim greater puller power when so required to haul the seine.

The present system of locating the drum on a fixed horizontal axis presents certain limitations which did not exist with the turntable system. The turntable roller can be moved from the stern to a fixed position over either side depending on how the set is made and better fair lead can be obtained while hauling. Fishermen are considering the feasibility of mounting the horizontal reel on a pivot to best suit the angle of the seine for hauling. If this was done the hydraulic drive system might well gain popularity because of the flexibility of the oil supply hoses against the fixed limitations of a mechanical drive. Some thought is being given to the feasibility of a drum on a vertical axis but level winding above and below the deck line then becomes a serious problem.

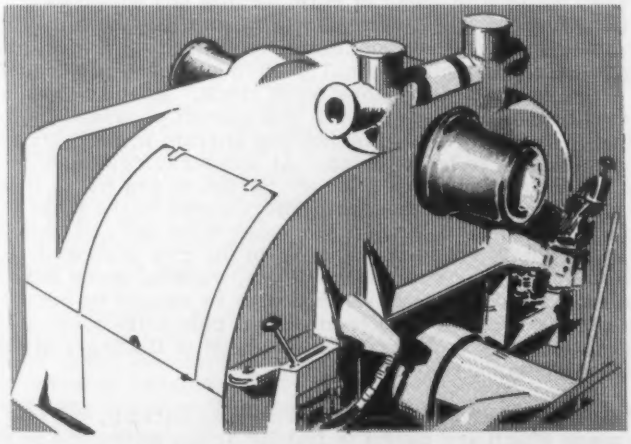

Fig. 4 - Air-control valve on combination purse-seine and otter-trawling winch.

A different method of hanging the seine is also essential for the drum system. Customary practice is to hang salmon seines in flights of 10 fathoms, consisting of 10 fathoms of cork line, 11 fathoms of stretched-measure netting, and 9 fathoms of lead line. This is known as 10-percent hanging, i.e., 10 percent more netting than cork line, and 10 percent less lead line than cork line. This type of hanging has proven quite effective both in shallow water where it tends to keep the purse to lead lines clear of the netting, and in deep water where it tends to form a bottom while towing the seine. When hauling by the drum method this system of hanging is unsuitable, as the lead line is too short for proper spooling because it would distort the meshes and loops in the cork line, which would bind when setting. However, the lead line can be hung about 3 feet shorter per flight, or 5 percent instead of 10 percent shorter than the cork line and be spooled evenly because of the greater bulk of the cork line. The backlog of experience indicates that a 5 percent hanging in of the lead line will not hold fish in deep water but proponents of the drum system maintain this can be overcome by hanging in an extra 2 or 2 1/2 fathoms or 30 to 35 percent of extra netting per flight, thereby creating a greater bag in the seine.

The use of drums for hauling nets is not a novel idea for it has been used in the salmon gill-net fishery for a number of years, but the problems in this fishery are simpler; the cork and lead lines are of equal length, the net is shallow, and only one or two hauls are made per night. The drum seining method was developed by Canadian fishermen several years ago and has been used by one boat on Puget Sound for some time. In the 1953 season 11 boats were fitted for drum seining.

Further development and modifications of the principles involved in drum seining may provide a marked contribution to reducing manpower requirements in the menhaden, herring, and mackerel fisheries. In the menhaden fishery a large crew is required both to haul the seine and to dry the fish for brailing. Menhaden seines are always set in a circle and the working of the fish toward the stern of the purse boats while the seine is being hauled suggest that the reels could advantageously be set at an angle to the boats. The use of pumps has naturally lowered the effort required to brail fish and power reels may carry this a step further.

CHILL TANKS IN THE SHRIMP FISHERY

Recently several shrimp trawlers, utilizing equipment designed by a commercial engineering firm, have been fitted with tanks of refrigerated sea water as a medium for cooling and holding shrimp. The University of Miami Marine Laboratory has been doing considerable research work on holding shrimp in this medium, and on means of surmounting some of the technological problems involved as described by Higman and Idyll (1952). Work is continuing along these lines. Results to date have demonstrated that the formation of "black spot," a discoloration caused by enzymatic action under the shell, can be retarded by holding shrimp in refrigerated sea water. An oxidase enzyme appears to be involved. At temperatures of 30° F. or lower, spoilage of shrimp can be retarded for a longer period in sea water than in regular ice. After 18 days, shrimp held in ice have deteriorated to the point of being unmarketable, but shrimp held in refrigerated sea water have been palatable after holding for 24 days. Unfortunately off-odors develop in the raw uncooked shrimp after being held in refrigerated sea water for 14 days, causing some buyer resistance. Unpublished results indicate the undesirable odor is caused by bacterial action which has been retarded by the use of aureomycin at concentrations of 10 parts per million. Experimental work is in progress in the hope of finding a more economical substance to achieve the same result.

Aside from this technological work and method of preserving shrimp, certain other applications have been made which are useful in fishing areas where ice is not available for the vessels. A practical use for chill tanks is found aboard freezer vessels. Several advantages occur because the headless shrimp can be chilled more rapidly and can be packaged for freezing as time permits. If large catches are made,

the whole shrimp can be chilled pending disposition. Furthermore, the temperature of the shrimp is reduced from the ranges of 85°-90° F. to 34°-40° F., thereby retarding deterioration and easing the load on the freezer. The tanks are about 10x3x3 feet in size, well insulated by 4 inches of cork, and are refrigerated by the main system for freezing and holding the catch. When using freon systems, 5/8-inch diameter copper tubing on approximately 8-inch centers is a common practice. One exploratory vessel now operating from remote Central and South American ports has a similar tank having a capacity of about 5,000 pounds of headless shrimp. The refrigeration system is driven by a compressor requiring about 2 hp., and temperatures of 30° to 35° F. are maintained depending on the amount of shrimp admitted to the tanks. Before departure and when en route to the fishing grounds, the operators try to reduce the temperature of the sea water to 28° F., or lower, to form slush ice as a reserve of cold. The shrimp are thoroughly washed with sea water before immersion in the tank to reduce contamination. It is reported that shrimp can be held in excellent condition by this method for at least 5 days. However, the operators of freezer vessels maintain that shrimp should not be held for more than 48 hours in chill tanks as some difference in quality is detectable through loss of flavor between shrimp held over 48 hours and those frozen soon after catching.

AIR-PRESSURE CONTROLS FOR WINCHES

Mechanical controls for the brake and frictions of trawling and other winches are standard practice, but certain inherent hazards of manipulation exist which can be minimized by air controls. When controlling the brake and friction of trawl winches, either the use of 2 hands or 1 hand and a foot is required where 2 men operate the winch. In the southern shrimp fishery, where one man operates the double-drum winch, the use of both hands and both feet are required. Operators of shrimp trawling fleets are faced with increasing difficulties in finding skilled crews; they have generally avoided winches with superior brakes and frictions of a mechanical-control type for fear that full brake may be applied against a full friction thereby causing undue strain on and damage to the drive mechanism. When the vessel is rolling in a heavy sea, the difficulties in manipulating mechanical controls are increased.

By using a two-way valve with a neutral position, full brake or full friction and intermediate degrees of each can almost immediately be applied by a simple movement of one hand. In the neutral position the drum is in free wheeling. Air from the vessel's tanks is delivered through a reducing valve that maintains a working pressure of 125 pounds at the control valve. In one extreme position, full air pressure is delivered to a piston attached to the brake band. An unloading spring on the nonpressure side, together with a return release line to the valve, completely releases the brake as the lever is moved to neutral or free-wheeling position. At the opposite extreme position of the valve, full air pressure is delivered to a normally oval-shaped air-flex clutch tube fixed to the driving side. Air causes the tube to expand and engage the drum to provide full friction for hauling. A return relief line to the valve and the desire of the air-flex tube to resume its normal moulded form provides free wheeling of the drum as the control valve reaches the neutral position. By this system 1 operator can easily control 2 drums, 1 with each hand.

Air-control systems for trawling and purse-seine winches have been used for several years on the Pacific Coast and have proven satisfactory. Operators believe them safer than mechanical controls because of more rapid response and greater freedom in rough weather. Disadvantages are the need for an air supply and somewhat greater cost than mechanical controls. The air after compression is reasonably dry, but if the tanks are not periodically bled of water in accordance with good marine practice quantities of water could be drawn into the system and could freeze in cold weather.

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OYSTERS ARE GOOD THE YEAR-AROUND

The wide-spread notion that oysters are harmful to consumers when eaten during the "non-R" months is debunked by the Assistant Surgeon General of the U. S. Public Health Service in a statement issued on September 1, 1950. The opening date of the traditional oyster season each year is September 1. "Oyster are edible the year-around" the Assistant Surgeon General declares, "but they are fatter, more platable, and more plentiful on the market during those months that contain the letter 'R'. It is only conincidental that those months in which the oyster is most palatable happen to be the 'R' months."

The oyster was highly regarded as an article of food by the North American Indians. Large mounds of oyster shells left by them may be found along our East Coast.

The Assistant Surgeon General said the tradition that oysters must be eaten only in the "R" months may have originated somewhat as follows:

In that species of oyster eaten in the Old World for centuries, fertilization of the seed from which the baby oysters grow takes place within the shell of the parent oyster. Shortly before the baby oysters are ejected by the parent to fend for themselves, they begin to develop a shell. If the Old World oyster is eaten at this stage of incubation, the large number of almost microscopic baby oysters, each developing a shell, impart a gritty quality to the meat. Because the reproductive period of all oysters is in the summer, early settlers of this country, cognizant of this but mindful of their Old World variety, avoided placing New World oysters on the menu until later in the year.

Even after our forefathers discovered that the North American east coast oyster fertilizes its eggs in the sea water outside the parent shell, oyster consumption in this country continued, for the most part, to be a winter activiety. Partly responsible for this was the fact that only until recent years have refrigeration facilities been developed whereby oysters can be preserved in warm weather while being transported from the coastal growing areas.

Today, when perishable food products are transported thousands of miles by railroad and airplane, yet preserved by refrigeration, the greater portion of the country's shellfish consumers still cling to the old tradition.

The advent of quality frozen oysters available throughout the year, however, is beginning to change this custom.

COOPERATIVE FISH-PRODUCT-ACCEPTABILITY PROJECT WITH QUARTERMASTER FOOD AND CONTAINER INSTITUTE

What factors affect the acceptability of fishery products by personnel of the Armed Forces? Are some species of fish more acceptable than others? Does the freshness of the fish--within reasonable limits--make any marked difference? In what cooked forms do fish show most appeal to a serviceman? The answers to these questions should point the way to an increased use of fish by the Armed Forces; ultimately they could result in improvement in the civilian per-capita consumption of fish.

Table 1 - Summary of Samples Prepared for Quartermaster Food and Container Institute Acceptability Tests

Species of Fish	Treatment of the Raw Fish	Frozen Products Prepared from Each Species in all Series. 1/
(A) Haddock (Melanogrammus aeglefinus)	Series 1. Frozen in brine (5° F.) at sea, thawed in water (65° F.) ashore. Series 2. Stored in ice for 2 days.	Fillets: 5-lbs. per package1/.
(B) Ocean perch (Sebastes marinus)	Series 3. Stored in ice for 3 days.	Squares: Raw, breaded, 4 ozs. each, 20 per package.
	Series 4. Served in ice for 10 days.	Sticks: Cooked, breaded, 1 oz. each, 72 per package.

1/ Additional samples of whiting (Merluccius bilinearis) and pollock (Pollochius virens) fillets in series 1 were prepared for comparative purposes and individual evaluation.

The first phase of a contemplated extensive program to answer these questions was started this past summer (1954). This first year's investigation is a cooperative venture, with the U. S. Fish and Wildlife Service's Boston laboratory doing the bulk of the work of preparing the required large-scale samples, and the Quartermaster Food and Container Institute arranging for large-scale taste penels to test the samples after various storage periods. The investigation will not be completed until the last taste-panel test late next spring. This progress report is made to furnish details of the samples prepared by the Fish and Wildlife Service.

In the planning stages even this first phase of the whole program expanded rapidly. A simple study to compare the acceptabilities of fillets from three or four different species of fish was quadrupled by considering the factor of freshness. It was decided to prepare fillets from fish stored in ice for two days, for five days, and for ten days, as well as from fish frozen fresh at sea. Then, in view of quite recent developments in fresh fish processing, the program was multiplied again. The phenomenal success of precooked fish sticks seemed to warrant their consideration alongside of the old standby, fillets. At the same time a third product, breaded fish

squares, more or less intermediate between fillets and fish sticks, was included. The size of each sample was cut in half when it developed that the results would be statistically significant and otherwise adequate if half of the samples were examined only after zero and after nine months' storage and the other samples were tested only after three and after six months' storage. Yet this half replicate study design still required a minimum of 50 pounds of finished product for each sample, and there were 48 samples.

The fortunes of fishing, weather, and equipment forced changes in the original design. It was not possible to secure all 48 samples of comparable histories. For two species, haddock and ocean perch, the full set of required samples, 12 for each, was prepared. In fact, with the design spoiled, it was necessary and fortunately possible to prepare full replicate size samples (100 lbs.) for these two species. For two species, whiting and pollock, only fillets prepared from fish frozen fresh at sea were assigned to this program. Extra samples of fillets and fish blocks, prepared from frozen and from iced whiting, pollock, flounder, and cod, intended for possible use in this program, may prove of value in the Service laboratory's other research studies.

As an incidental supplementary cooperative project, the Fish and Wildlife Service laboratory personnel prepared and shipped special lots of layer-packed fillets and of unbreaded uncooked fish sticks. These are to be used to prepare experimental samples of vacuum-dehydrated products.

All of the experimental samples were prepared from fish caught on three trips (sailing dates: June 28, July 14, and August 9) of the Service's experimental vessel Delaware. Although the trips were intended to secure data on the operation of the vessel's freezing and storage equipment, the fishing activities were devoted primarily to securing the fish of specific known histories needed for this cooperative project. A technologist from the Quartermaster Food and Container Institute was aboard the vessel on each trip to assist in supervising the handling and identification of each experimental lot.

Although the final samples were prepared from only 10 lots of fish, nearly 20 special experimental lots varying in size from 1,000 to 2,000 pounds were delivered and processed into fillets and blocks. Fish delivered by the first trip on July 5 were used in trial runs to reveal operational difficulties and to prepare samples which could be used if necessary. The finished samples to be used in the large taste-panel tests were prepared from fish delivered by the second trip on July 27 and the third trip on August 24.

Four commercial fish-processing firms (in Chelsea and Gloucester, Mass.) cooperated by filleting and skinning the several lots of fish. The lots of frozen fish were first thawed in the laboratory's special circulating water-thawing tank. From each lot at least 100 pounds (only 50 pounds in the cases of the single whiting and pollock samples) were packaged as fillets wrapped in cellophane, six wraps per five-pound carton. The remaining skinless fillets, at least 240 pounds from each lot, were packed as $7\frac{1}{4}$-pound blocks in a standard waxed container. All processing operations were closely observed and checked by one or more technologists to avoid any mixing of sample lots. The fillets and the blocks were frozen either in the laboratory's plate freezer or in readily available commercial freezers.

The frozen fish blocks were processed by a cooperating firm (in Gloucester) into squares of fish approximately 3 by $\frac{1}{2}$ by $3\frac{3}{4}$ inches and into sticks approximately $\frac{5}{8}$ by $\frac{3}{4}$ by $3\frac{3}{4}$ inches. The squares and sticks, while still frozen, were dipped in batter and then in breading according to accepted industry practices. The breaded squares were packed 20 to the carton and the cartons (minimum of 20) were returned to the freezer. The breaded sticks were deep-fat fried in vegetable oil according to customary procedures, cooled, and then packaged 72 sticks per carton and at

least 20 cartons per sample. The packs of sticks were refrozen in the company's plate freezers. Each processing operation was closely followed by laboratory technologists who carefully labeled boxes and cartons at every stage.

After all required samples had been prepared, they were collected together at a commercial cold storage and carefully reassembled by the technologists. For the convenience of the testing groups each master carton contained a sample of each processing variation for one species. Thus there were 20 master cartons containing haddock samples and each master carton contained four 5-lb. cartons of fillets (from fish iced 2, 5, and 10 days, and fresh frozen fish), four 20-portion cartons of squares, and four 72-unit cartons of sticks. Twenty master cartons contained similar ocean perch samples. Additional master cartons contained whiting and pollock fillets.

Nearly 3,000 pounds of finished products were shipped to Fort Lee, Richmond, Virginia. There they will be served to Armed Services test groups, representative of all areas of the country and all food preference backgrounds. The tests will be made soon after the samples arrive, and then after 3, 6, and 9 months of storage. Simultaneously part of each sample will undergo technological and chemical testing at the Quartermaster Food and Container Institute in Chicago. The Fish and Wildlife Service has been assured that the results of the tests will be publicized at the end of the investigation and will be made available on a current basis to guide in planning Service research projects for next year.

--Harris W. Magnusson, Fishery Products Technologist,
Fishery Technological Laboratory,
Branch of Commercial Fisheries,
U. S. Fish and Wildlife Service,
East Boston, Massachusetts

CLEANING FISH AND SHELLFISH FOR CANNING

Among the many quality factors which must have considerable control in canning fish and shellfish to assure a repeat business is that of cleaning the raw product. Oyster, clam, and crab shells are very necessary to the living shellfish, but are extremely hard on the customers' teeth and temper. Fish fins, tails, collar bones, and entrails are important also to the live fish, but in the canned product they are repulsive.

With today's prices of canned sea foods, the consumer has every right to expect the highest quality in every container he buys. It has been repeatedly demonstrated that good cleaning can be achieved at almost any production level. It is essential that the employees responsible for preparing the cleaned raw product be fully informed of the standard of quality expected, namely, that nothing should go into the can which he would not serve in his own kitchen.

--Seafood Scanners, May 20, 1954

KEEPING QUALITY OF CHILLED DUNGENESS CRAB MEAT PACKED IN HERMETICALLY-SEALED CONTAINERS

Experimental work is being carried out at the Fishery Products Laboratory in Ketchikan, Alaska, to determine the keeping quality of dungeness crab meat when held at temperatures of 32° F. and above prior to freezing or after thawing. This project follows earlier studies which indicated that the storage life of frozen dungeness crab meat could be extended to 42 weeks by packaging the meat in hermetically-sealed, metal containers under vacuum and storing at 0° F. or below.

The data obtained on keeping quality at temperatures above freezing will provide a basis for formulating government purchase specifications and for developing practice recommendations for crab processing plants, wholesalers, shippers, and consumers. Organoleptic tests (color, flavor, odor, and texture), chemical determinations (volatile reducing substances, volatile nitrogen, indol, and pH), and total bacterial counts made at regular intervals will supply the needed information for following the course of spoilage of the product and could eventually lead to objective tests for better quality control.

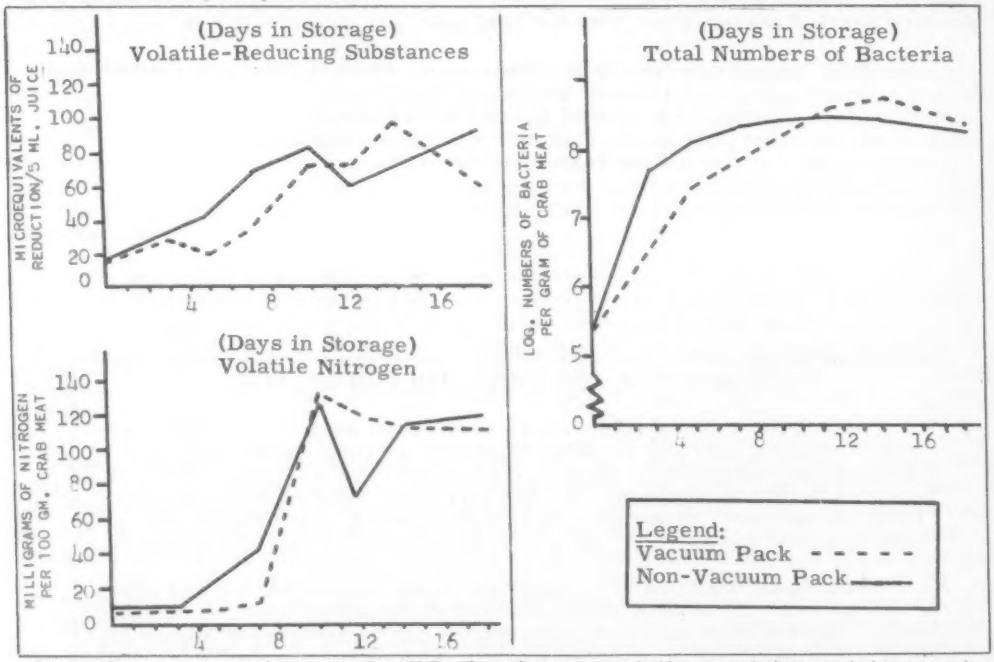


Fig. 1 - Objective tests on crab meat stored at 40° F. The crab meat was packed by two methods: (a) packed in cans and hermetically sealed under high vacuum, and (b) packed in cans and sealed at atmospheric pressure.

The initial experimental work has been on the keeping quality of fresh (unfrozen) crab meat packaged in cans, sealed under a high vacuum or at atmospheric pressure, and stored at 40° F. The data from the organoleptic examination indicated that the storage life of chilled dungeness crab meat stored at 40° F. was 7 days when the meat was packaged dry in cans and hermetically sealed under a high vacuum. The acceptable storage life of crab meat packaged dry in cans and hermetically sealed at atmospheric pressure was 5 days at 40° F.

The information shown in figure 1 represents the results of only one test series. However, in this series there was a definite increase in bacterial count, volatile nitrogen, and volatile reducing substances in the crab meat during storage. It was observed that changes in quality were not detected organoleptically until 2 to 3 days following a significant increase in the number of bacteria.

--Clarence J. Carlson, Fishery Products Technologist,
Fishery Products Laboratory,
Branch of Commercial Fisheries,
U. S. Fish and Wildlife Service,
Ketchikan, Alaska

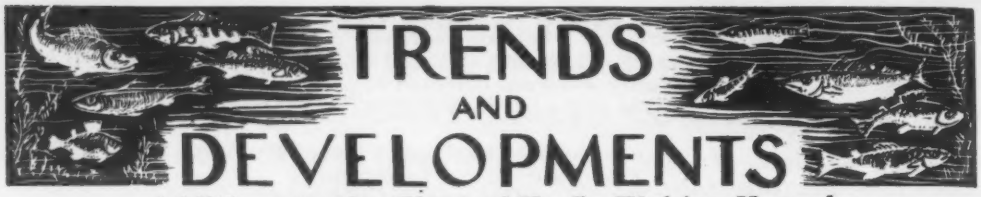
FILL OF CONTAINER FOR CANNED SALMON

Two requirements must be met to achieve a proper fill of container for canned fish: (1) that the net weight of the contents of the container must at least equal the label weight, and (2) that the container must be at least 90 percent filled. To attain the required 90 percent fill of container for canned salmon and taking into consideration the average specific gravity of salmon and the water capacities of various cans used, the following weights are necessary:

Can Name	Can Size	Minimum Net Content
4-pound	603x405	4 lbs.
1-pound tall	301x411	16.2 oz.
1-pound flat	401x211	15.5 oz.
½# st.	307x201.25	8.2 oz.
½# oval	513x307x103	7.8 oz.
½# C. R.	307x200.25	7.75 oz.
½# tuna	307x113	6.8 oz.
¼ pound	301x106	3.75 oz.

The opinion of official agencies is that all containers packed must be filled at least to the 90 percent level. If one consumer buys a one-pound tall can of salmon that weighs 16.7 ounces, and a second consumer buys a similar can of salmon that weighs only 15.7 ounces; the second consumer has not received the proper weight even though the cans average 16.2 ounces.

--Seafood Scanner, July 1954



Additions to the Fleet of U. S. Fishing Vessels

A total of 42 vessels of 5 net tons and over received their first documents as fishing craft during August 1954--14 less than in August 1953. Louisiana and Washington led with 7 vessels each, followed by Texas with 6 vessels, reports the U. S. Bureau of Customs.

Vessels Obtaining Their First Documents as Fishing Craft, August 1954 and Comparisons

Section	August		January-August		Total 1953
	1954	1953	1954	1953	
	Number	Number	Number	Number	Number
New England	-	-	21	16	20
Middle Atlantic	-	2	13	15	19
Chesapeake	5	11	67	53	83
South Atlantic	6	7	83	69	116
Gulf	17	20	272	156	264
Pacific	12	9	88	139	164
Great Lakes	-	-	3	5	7
Alaska	2	6	22	43	53
Hawaii	-	1	1	2	3
Unknown	-	-	1	-	-
Total	42	56	571	498	729

Note: Vessels have been assigned to the various sections on the basis of their home port.

Air Force-Developed Odor Control May Be Useful in Fish-Processing Plants

The U. S. Air Force recently reported on extensive tests of agents for control of undesirable odors, but which are not dangerous to personnel, according to a Department of Commerce July 30 press release. Some of the conclusions cited may be of interest to fish processors and cold-storage warehouse operators. One of the agents, "ozone," appears to be of value as a purifying agent in cold-storage and food-storage spaces for the minimization of odor formation and the growth of microorganisms. Actual use for these purposes awaits the solution of practical problems of dissemination throughout the storage space. Among the advantages cited were ozone's universal ability to cancel bacteriologically-produced malodor of the amine type through oxidation and actual removal from the area.

Two new reports on this research by the Air Force were announced by the U.S. Department of Commerce:

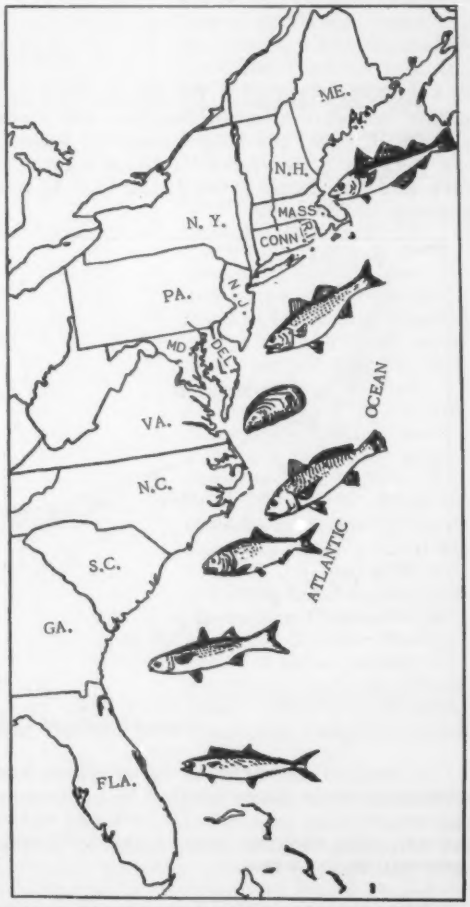
Control of Odor in Evacuation Aircraft, 1952, is a 47-page report, with charts and tables, and is available from U. S. Department of Commerce, Washington 25, D. C., at $1.00 per copy. This report explains that advances in the control of malodorous vapors in factory, hospital, or home appear possible as a result of Air

Force studies of methods of cancelling or masking odors from gangrenous wounds and other undesirable odors occurring in evacuation aircraft. Part 3 of this study indicates progress in the determination of effective control agents which are not harmful to personnel, are not themselves malodorous or persistent, and do not suppress "alarm" odors indicative of fire or mechanical trouble, such as gas vapor, scorched paint odor, and the odor of hot motor oil.

Odor Control for Air Evacuation Aircraft, 1952, is an 86-page report, with tables, charts, and diagrams. Available from U. S. Department of Commerce, Washington 25, D. C., at $2.00 per copy. The final report in this series investigates practical problems of the application of odor-suppressing agents in habitable spaces, with particular attention to the possibilities and limitations of ozone as a cancelling agent.

Atlantic States Marine Fisheries Commission

THIRTEENTH ANNUAL MEETING: The Atlantic States Marine Fisheries Commission, at its 13th Annual Meeting in Baltimore, Md., October 4-6, unanimously adopted a resolution expressing officially its conviction that foreign shellfish which does not meet the sanitary standards required of domestic oyster and clam producers should be kept out of the country. The resolution does not affect Canada because that nation already has a working agreement with the United States on shellfish sanitation and requires its producers to meet the same high standards required of shellfish producers in the United States. Adoption of the resolution came after commissioners from shellfish-producing states had expressed the fear that importation of uncertified shellfish might result in harm to the consuming public which in turn might not differentiate between certified and uncertified shellfish products.



The Commission renewed its request for the rebuilding of the 70-year old laboratory of the Service at Woods Hole, Mass., badly damaged by four hurricanes two of which last month carried away the docks. This modernization, said the Commission, is urgently needed for important research for the states of the North Atlantic and Middle Atlantic Sections and the International Commission on the Northwest Atlantic Fisheries, and for the convenience of the 65,000 persons who annually visit its aquarium.

The Commission urged the Service to initiate biological studies of scallops, whiting, and menhaden and to investigate the causes of recent oyster mortality. It also asked for studies on the economics of the sea scallop industry; effects of dragging on the bottom; extension of the present technological program in New England waters dealing with exploratory fishing and freezing whole fish at sea.

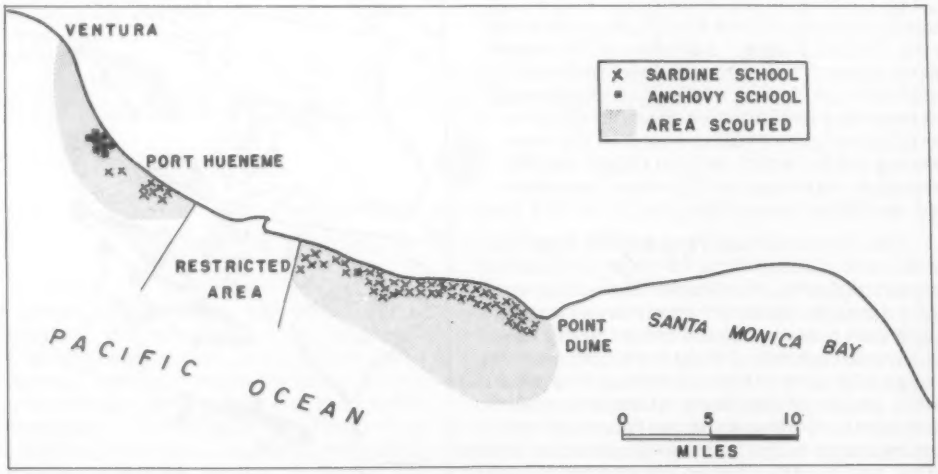
The Commission endorsed a Middle Atlantic Section request that funds made available under the Saltonstall Act, from duties on imported fish products, should be made available under an equitable system of apportionment to competent state research agencies. The Middle Atlantic Section accepted in principle a proposal that state fishery agencies in New York, New Jersey, and Pennsylvania be authorized to cooperate with each other and to adopt flexible regulations covering all species of fish that go up the Delaware River to spawn.

The Commission adopted a resolution recommended by the Chesapeake Bay Section opposing a reported plan to dump anthracite coal mine waste or any other industrial wastes into the Chesapeake Bay or any of its tributaries.

At the request of the South Atlantic Section the Commission endorsed a request to the Fish and Wildlife Service to extend the shad program which in its first six years has contributed much valuable data, and to enlarge and carry on the economic and marketing study of shrimp just begun by the Service.

California

AIRPLANE USED TO SPOT FISH SCHOOLS (Airplane Spotting Flight 54-1): In order to determine the number and kinds of fish schools in the inshore area off Southern California, the Department of Fish and Game employed a commercial fish spotter V-O for a two-hour flight on August 17. The plane covered the area between Ventura and Pt. Dume from 12:30 to 2:40 p.m. and also observed commercial fishing activity in the area.



Airplane Scouting 54-1, flight of the V-O, Aug. 17, 1954.

A total of 120 schools of sardines and 15 schools of anchovies were tallied. The sardine schools as estimated by the commercial piolt ranged from about 10-30 tons with an average of about 15 tons per school. The anchovy schools were of much less uniform size ranging from about 5-80 tons per school. No other species of fish were observed in the area.

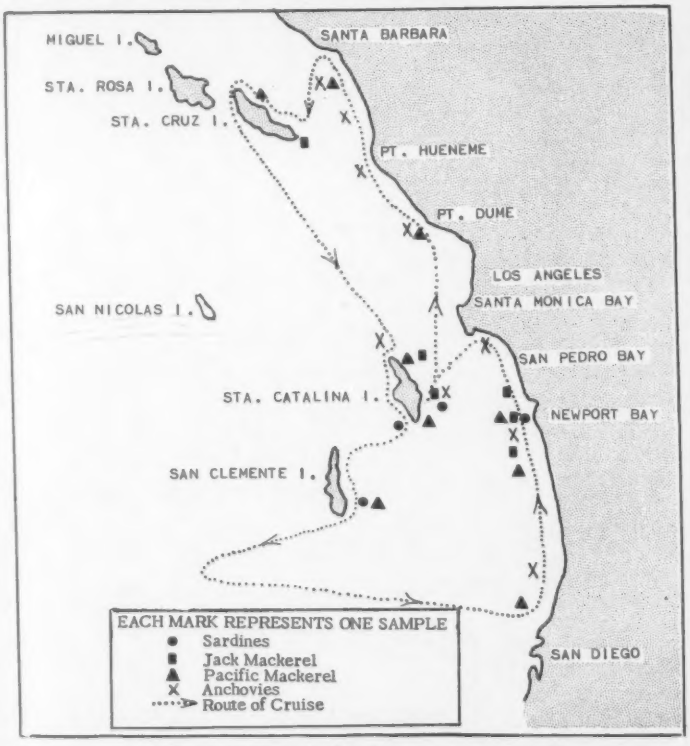
Three porter seine boats were observed setting on anchovies while being directed by the spotter from the air. A total catch of about 60 tons was made that day.

Notes were made on schooling behavior and color of the sardines and anchovies.

A large herd of California sea lions was observed swimming through the area of sardine concentration, but the sea lions seemed uninterested in the fish as they passed near them. It was estimated that about 90-100 sea lions were in the herd. They were swimming up and parallel to the coast.

* * * * *

CENSUS OF FISH POPULATIONS AND SEA SCANAR TESTS CONTINUED BY "YELLOWFIN" (Cruise 54-Y-7): The census of the populations of Pacific sardines, anchovies, jack mackerel, and Pacific mackerel off the coast of Southern California was continued by the California Department of Fish and Game's research vessel Yellowfin on a 10-day cruise completed at Los Angeles on August 9. The vessel also tested the recently-installed sea scanar.



Cruise 54-Y-7 of the M/V Yellowfin, July 30-Aug. 9, 1954.

A total of 29 light stations were occupied, 4 of which yielded samples of sardines, 6 jack mackerel, 8 Pacific mackerel, and 7 anchovies. In addition to the samples collected, Pacific mackerel were observed but were not sampled at 4 stations, anchovies at 2, and an unidentified school at 1. Fish schools seemed more numerous in this area than for the past two years. Two large Pacific mackerel schools (about 50-100 tons) were observed off the SE. end of Santa Cruz Island. Small schools of Pacific mackerel, from a few tons to a few fish, were observed throughout the area surveyed. Several schools of large fish (presumably bluefin tuna) were seen at the east end of Catalina, and midway between San Clemente Island and Tanner Bank. Several small spots of sardines were observed; however, only 3 large sardine schools (up to 50 tons) were seen. There were many anchovy schools observed throughout the area. Small jack mackerel resulting from this year's spawning were found over the area from La Jolla to San Pedro.

Sauries were seen over most of the area covered; however, they were scattered and not schooled densely in any area. Small squid were collected along the coast, and flying fish were in evidence during the entire cruise. Grunion and top smelt were collected quite frequently along the mainland; many grunion were in a spawning condition.

The sea scanar proved a definite aid in locating fish schools. Many schools were located by the scanar which were not seen visually. Many schools that were seen visually were picked up by the scanar first. Schools of fish showed up well with good definition at ranges less than 400 feet. Very large schools showed good definition out to about 600 feet. Beyond 800 feet no fish school was located during the cruise.

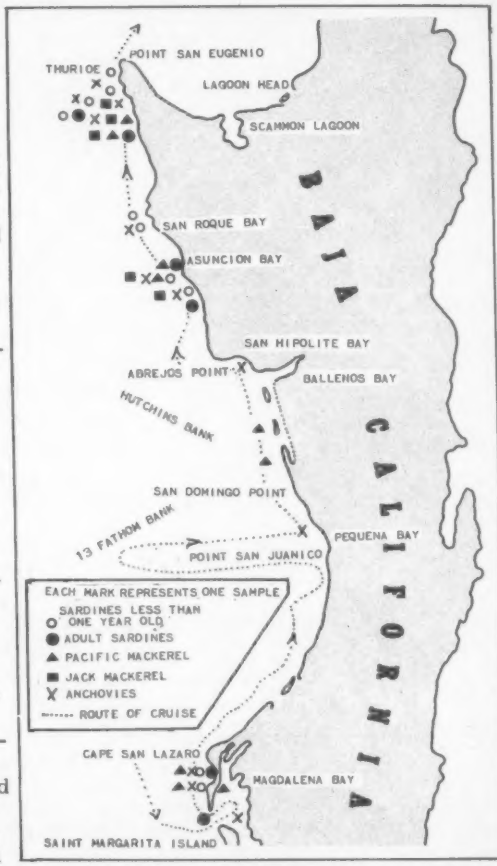
* * * * *

SARDINE ABUNDANCE OFF LOWER CALIFORNIA SAMPLED BY "YELLOWFIN" (Cruise 54-Y-8): The first of four cruises for 1954, designed to assess the abundance of sardines resulting from 1954 spawning, was completed by the California Department of Fish and Game's research vessel Yellowfin on September 2. The cruise, which started on August 16, was also designed to assess the relative abundance of older sardines, jack mackerel, Pacific mackerel, and anchovies. Also, a total of 326 yellowtail were tagged and released. The cruise included the area along the coast of Lower California from Pt. Eugenia to Magdalena Bay.

A total of 44 light stations were occupied. Sardines were found at 15 stations, anchovies at 13, Pacific mackerel at 11, and jack mackerel at four. Of the 15 stations yielding sardines, 12 yielded sardines of the 1954 spawning season, and 5 yielded adults. In general, adult sardines were not very abundant in the entire area surveyed; juvenile sardines less than one year old were more abundant in the vicinity of Turtle Bay; and Pacific mackerel and anchovies appeared throughout the area. Thread herring were quite abundant between Pt. San Juanico and Magdalena Bay.

Sea surface temperatures ranged from 17.05° C. (62.7° F.) at 2.1 miles SSE. of Pt. Rompiente to 25.65° C. (78.2° F.) in Magdalena Bay. Sardines were sampled from water of surface temperatures between 17.05° C. (62.7° F.) and 24.10° C. (75.4° F.).

Yellowtail caught on hook and line were tagged at various places during the cruise. At the 13 Fathom Bank (inside Uncle Sam Bank) yellowtail were observed swimming under the light. Chumming with condemned canned fish so excited the yellowtail that they were easily captured with the blanket net. Two successive sets yielded 26 and 60 yellowtail which were subsequently tagged and released.



Cruise 54-Y-8 of the M/V Yellowfin, Aug. 16-Sept. 2, 1954.

Cans--Shipments for Fishery Products, January-July 1954

Total shipments of metal cans for fish and sea food during January-May 1954 amounted to 59,566 short tons of steel (based on the amount of steel consumed in the manufacture of cans), compared to 61,818 short tons for the same period last year. Smaller packs of Maine sardines and a leveling off of tuna canning were reponsible for this year's drop in metal can shipments.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

Federal Purchases of Fishery Products

FRESH AND FROZEN FISHERY PRODUCTS PURCHASED BY DEPARTMENT OF DEFENSE, AUGUST 1954: Fresh and frozen fishery products purchased for the military feeding of the U. S. Army, Navy, Marine Corps, and Air Force by the Army Quartermaster Corps in August 1954 amounted to 2,234,850 pounds, valued at $977,846 (see table). This was an increase of 19.5 percent in quantity and 47.7 percent in value as compared with July purchases, but lower by 26.7 and 31.4 percent, respectively, than August 1953 purchases.

Purchases of Fresh and Frozen Fishery Products by Department of Defense
(August and the First Eight Months of 1954 and 1953)

QUANTITY				VALUE			
August		Jan.-Aug.		August		Jan.-Aug.	
1954	1953	1954	1953	1954	1953	1954	1953
Lbs.	Lbs.	Lbs.	Lbs.	$	$	$	$
2,234,850	3,048,474	16,142,289	19,114,012	977,846	1,425,408	6,728,060	8,269,660

Army Quartermaster Corps purchases of fresh and frozen fish during the first eight months in 1954 totaled 16,142,289 pounds (valued at $6,728,060), lower by 15.5 percent in volume and 18.6 percent in value as compared with the similar period a year earlier.

Prices paid for fresh and frozen fishery products by Department of the Army in August 1954 averaged 43.8 cents per pound as compared with 35.4 cents in July and 46.8 cents in August 1953.

In addition to the purchases of fresh and frozen fishery products indicated above, the Armed Forces generally make local purchases which are not included in the above figures. Therefore, actual purchases are somewhat higher than indicated, but it is not possible to obtain data on the local purchases made by military establishments throughout the country.

Fillet and Fish Stick Promotion in Columbus, Ohio

From September 20 through November 20, Columbus, Ohio, was scheduled to be the scene of a concentrated fish fillet and fish stick sales promotion campaign. The national fisheries trade association and the many producers of frozen fillets and fish sticks were cooperating in this joint product promotional campaign in that city, which is famous as an introductory spot for food promotion campaigns.

In cooperation with the industry, the U. S. Fish and Wildlife Service arranged for fish cookery demonstrations for institutional food groups in the greater Columbus area: Columbus city schools; Columbus Diocese parochial schools; Franklin County schools; Central Ohio public schools; Port Columbus Naval Air Station; Ohio Department of Mental Hygiene and Correction; State prison and State hospitals. Other organizations cooperating in the promotion programs are the Columbus City Health Department; Ohio Fuel Gas Company; Columbus and Southern Electric Company; Central Ohio Western Association; and the radio, TV, and newspapers of Columbus.

The importance of this fishery products promotion campaign assumes unusual importance during this period, inasmuch as the livestock and vegetable interests were scheduled to conduct simultaneously a national program to promote the sales of their products. Through the media of radio, TV, newspaper, and public contacts, the National Fisheries Institute, the fishery industry, and the Fish and Wildlife Service hope to impress upon the consumers of the greater Columbus area the importance of fishery products in their every day diet.

With increased competition for the consumer's attention, promotion programs of this nature become increasingly important. Producers throughout the country should direct their attention to the activities in Columbus during this period and should observe closely the results, for application to the sales of their own products.

Fur-Seal Skin Prices Decline at Fall Auction

A decline in prices characterized the semiannual auction of Government-owned fur-seal skins at St. Louis on October 18, Secretary of the Interior McKay announced October 19. A total of 26,590 skins, products of the sealing industry administered by the Department of the Interior's Fish and Wildlife Service on the Pribilof Islands of Alaska, brought $2,045,326. This compares with 25,038 skins sold for $2,301,646 at the April sale.

The average price for all skins sold for the account of the United States Government was $76.92, representing a 13.6-percent decline from the average for the spring auction.

Of the Alaska skins, 14,790 were dyed "Matara" (brown), 1,743 were "Safari" brown (a lighter brown), and 10,057 were blacks. The Matara skins brought an average of $73.49, an 11.7-percent drop from the April auction. The Safari skins sold for an average of $52.97, 9.2 percent lower. The black skins averaged $86.12, 16 percent less than in April. Because sizes and qualities of skins differ somewhat from one auction to another, the comparisons must be considered relative.

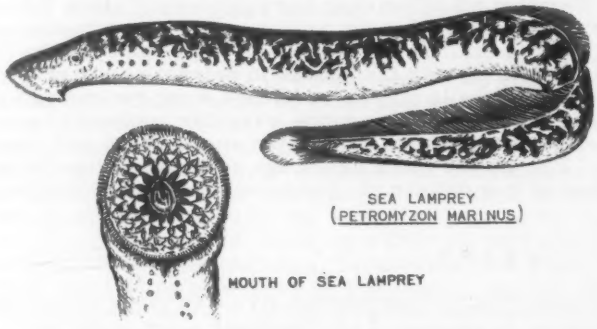
A total of 920 Matara-processed skins, representing part of the United States share of skins taken off the Japanese coast in 1952 as part of an international research program, averaged $24.31, for a total of $22,362.50.

In addition to the United States-owned skins, 5,442 Cape of Good Hope fur-seal skins were sold for the account of the Government of the Union of South Africa at an average of $26.64, a decline of 16.5 percent, and 800 Uruguay fur-seal skins were sold for the Uruguayan Government at a $27.84 average.

The next sale is scheduled for April 4, 1955.

Great Lakes Fishery Investigations

MANY LAMPREYS CAUGHT IN CONTROL STRUCTURES: Seven control structures maintained by the Great Lakes Fishery Investigations staff of the U. S. Fish and Wildlife Service on tributaries of northern Lake Michigan between March 19 and May 24, 1954, took 5,828 lampreys.



SEA LAMPREY (PETROMYZON MARINUS)

MOUTH OF SEA LAMPREY

During the same period, 44 structures located on Lake Superior streams caught 1,949 lampreys. The take of lampreys in Lake Superior streams east of Marquette was generally larger than in the 1953 season. To the west of Marquette, only 6 of 28 streams yielded any sea lampreys, a circumstance suggesting that this parasite may not yet be firmly established in the central and western areas of the Lake.

* * * * *

EXPERIMENTAL GILL-NETTING AND TRAWLING IN SOUTHERN LAKE MICHIGAN ("CISCO" Cruise VI): Twice during Cruise VI of the Great Lakes Fishery Investigations vessel Cisco experimental gill nets were set at two different depths (25 and 50 fathoms) off Grand Haven. Trawling was done off Grand Haven and in the areas between Milwaukee and Port Washington, between Port Washington and Sheboygan, and between Sheboygan and Manitowoc. The vessel was on this cruise from August 17 through August 29. A fishery and limnological survey of southern Lake Michigan was the principal purpose of the cruise.

The "bloater" continues to be the most abundant species of chubs in catches of both trawls and gill nets. All species of chubs are more abundant in gill nets than they were earlier this year. This is particularly true of nets set at 50 fathoms. Nylon nets continue to take several times more chubs than similar linen nets.

An interesting midwater distribution of chubs was discovered during the intensive study. Chubs were taken at night between 5 and 15 fathoms over a 40-fathom bottom. At the same time there was a heavy concentration of Mysis relicta between 5 and 10 fathoms. Fathogram traces showed a "scattering layer" between 5 and 10 fathoms during the period that chubs were taken in this depth range.

Hydrographic transects were made across Lake Michigan from Grand Haven to Milwaukee, and from Manitowoc to Ludington. Three hydrographic stations were made along each transect. Five hundred and eighty drift cards were distributed along the transects. Ten cards packaged in plastic envelopes and ten in sealed glass bottles with drag attachments were dropped at 5-mile intervals. A 13-hour intensive limnological and fishing study was made off Grand Haven.

Drift bottles released between Grand Haven and Milwaukee on July 9 during Cruise IV have been recovered over a sufficient length of time to show the pattern and direction of drift. Most of the bottles released 3 miles west of Grand Haven moved northward and were recovered along the east shore near Muskegon. One of these, however, was recovered at Chicago. Bottles released further west of Grand Haven (5 to 35 miles out in the lake) moved shoreward in the area south of Grand Haven and have been recovered all along the southeast and south shore to the Chicago area. The sequence of returns along the shore indicates the presence of a southeasterly current that moves in from the center of the lake off Grand Haven and then moves in a clockwise direction along shore. No recoveries have been made of bottles released from the center of the lake to a point about 27 miles east of Milwaukee. Drift bottles released from 3 to 27 miles off Milwaukee were recovered along the shore north of Milwaukee to Sheboygan, indicating the presence of a current moving northward in this area. Drift cards enclosed in plastic envelopes and plastic tubes were released during Cruise IV along with the bottles to determine the relative efficiency of the three methods. Cards in plastic envelopes were recovered in a pattern similar to that of the bottles but somewhat more irregular, possibly because of increased influence of winds as the card floats in the surface film and has no contact with deeper currents. The plastic tubes had drags suspended from them as did the bottles and were recovered in a pattern very similar to that of bottle recoveries.

* * * * *

GILL-NETTING AND TRAWLING TESTS CONTINUED BY "CISCO" (Cruise VII): Experimental gill-netting and trawling in southern Lake Michigan were continued by the Cisco on Cruise VII. Gill nets were set in two depths off Grand Haven, two depths off Racine, and in midlake between Racine and Holland in 86 fathoms. An oblique set of gill nets was made off of Grand Haven. Trawling was carried on off South Haven and in the area between Milwaukee and Racine. Almost continuous high winds prevented any work on the lake on three days, and work was impaired by high seas during all but one of the remaining days of the cruise. Trawling activity was greatly reduced and a scheduled intensive limnological study was cancelled. The Cisco departed Grand Haven on September 7 and returned to that port on September 19.

Surface temperatures over Lake Michigan are falling steadily. They were extremely constant across the Lake, ranging mostly between 66° and 69° F., except for a narrow, somewhat cooler area near the east shore.

Chub (Leucichthys kiyi) made up nearly three-quarters of the midlake gill-net set, but they did not appear to be nearly so abundant in this area as they were in early summer. These nets also yielded two of another species of chub (L. nigripennis) the first of the year. The second lake trout of the year was taken in gill nets set off Racine. This trout weighted 2½ pounds and had one healed lamprey scar and 3 fresh scars--one of them leaving part of the intestines exposed.

Hydrographic transects were made across Lake Michigan from Grand Haven to Milwaukee; from Racine to Holland, Michigan; and from South Haven to Waukegan, Illinois. Eight hydrographic stations were visited along the transects. A total of 740 drift cards were distributed along the Grand Haven-Milwaukee and South Haven-Waukegan transects. Procedure was the same as during Cruises V and VI--10 cards

packaged in plastic envelopes and 10 in sealed glass bottles with drag attachments dropped at 5-mile intervals.

During the period May-September, the conductivity (a rough measure of nutrient minerals) of surface water has been higher in shore waters than in midlake, probably because of the high conductivity of river water entering the lake along shore. In May, winds distributed some of the warmer less dense river water over the surface of the lake. Conductivity appeared to decrease with depth of water although differences were not great. As summer progressed the conductivity of the deeper water has steadily increased and the difference between surface and deep water has become well defined thus reversing the pattern that existed in May. The change of conductivity with depth during the summer is probably the result of use of mineral nutrients from the surface water by plankton organisms, the subsequent settling of these organisms and the release of the contained electrolytes upon death, and decomposition of the plankton at greater depths.

A special effort was made during this cruise to obtain an explanation for the much poorer return of drift cards enclosed in plastic envelopes and tubes than for cards contained in glass bottles. Observations of material washed up along five miles of shore revealed several possibilities. Due to their color and form the cards in plastic envelopes and tubes blend in well with other flotsam found in windrows along the beach. Cards in plastic envelopes could be more easily buried in this material than plastic tubes or glass bottles. Plastic envelopes can also be blown far back from the beach by strong winds and can be covered by blown sand much more easily than tubes and bottles, with the bottles being least likely to be covered. If all these containers were displayed on open sand the glass bottle would be most easily seen. Of the three containers, regardless of how they appeared on the beach, the glass bottle would be the most likely container to be picked up and examined not only because the card rolled up within the bottle is more conspicuous than cards enclosed in envelopes and tubes, but also because glass bottles are choice items for rifle practice as evidenced by the greater number of broken than whole bottles found along the beach and the ever-present empty cartridge boxes.

Gulf of Mexico

FIRST COMMERCIAL TUNA CATCH LANDED: The first commercial catch of tuna in the Gulf of Mexico was landed at Pascagoula, Miss., early in October, Secretary of the Interior Douglas McKay announced October 19.

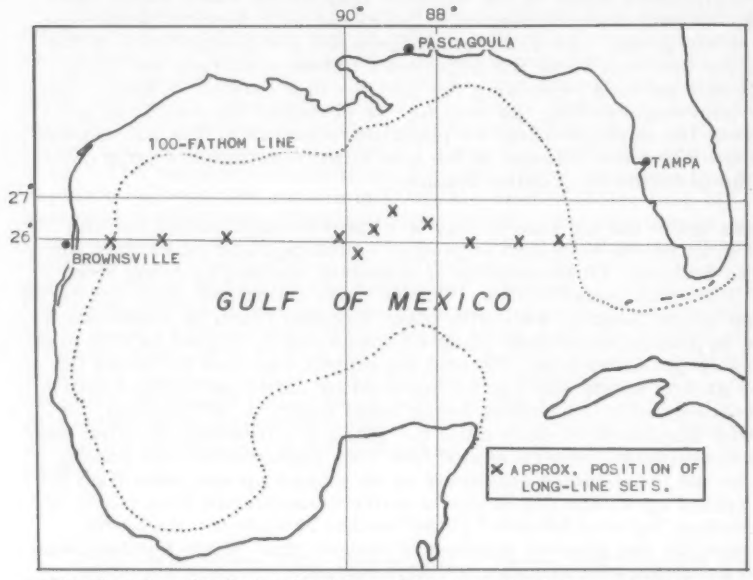
The fishing vessel Santa Antonino made port with 12½ tons of prime yellowfin tuna taken in the central Gulf region. The fish weighed about 100 pounds each.

Last spring U. S. Fish and Wildlife Service specialists aboard the exploratory fishing vessel Oregon discovered that yellowfin tuna were widely distributed in the Gulf and could be taken at subsurface levels with modified Japanese-style long-line gear. Four successful tuna trips have been made to various parts of the Gulf and the Oregon found that the central Gulf's northbound current, between 88° and 90° west longitude, affords the best yellowfin fishing at the present time. Making use of this information, the Santa Antonino proceeded to this area and reported catches as high as 9 tuna per 100 hooks, a very good showing for this type of fishing.

Another commercial vessel, a converted red-snapper schooner operating out of Pensacola, Fla., also has begun tuna fishing in the Gulf. Commercial interests in Mississippi are now reported to be outfitting a long-line vessel, scheduled to begin tuna operations soon.

Gulf Exploratory Fishery Program

"OREGON" CATCHES 102 LARGE YELLOWFIN TUNA (Cruise 26): A total of 102 large yellowfin tuna were caught by the Service's exploratory fishing vessel Oregon on an 18-day exploratory tuna long-lining trip in the central Gulf of Mexico, completed at Pascagoula, Mississippi, on October 6. Fifteen of the fish were mutilated by sharks and the remaining (87) whole yellowfin tuna weighed 10,376 pounds. Also, 6 blackfin tuna, 15 white marlin, 3 blue marlin, 3 sailfish, 1 white skipjack, and 25 sharks were caught on the long lines. Two blackfin tuna and one $3\frac{1}{2}$-pound yellowfin tuna were caught on trolling lines.



This chart shows distribution of exploratory fishing by the Service's vessel Oregon on Cruise 26.

A total of 11 long-line sets were made (4,600 hooks per set) along the 26th parallel from the edge of the Florida continental shelf to the Texas continental shelf (fig. 1). Ten sets, made over depths exceeding 1,000 fathoms, produced all the yellowfin tuna--four of these in the central Gulf northbound current (between 88° W. and 90° W.) accounted for 72 fish. The other six sets, made east and west of this current, produced the remaining 30.

Hurricane "Gilda" caused the Oregon to enter the port of Brownsville, Texas, two days ahead of schedule. Strong winds and high seas hampered operations on the return trip. One set made on top of the Texas shelf at the request of Texas fishing interests produced 2 blackfin tuna and 4 white marlin, but no yellowfin tuna. However, two additional long-line sets were made in heavy seas farther east in deeper water and both produced large yellowfin tuna.

As secondary objectives to this cruise, the Oregon experimented with five different materials for main lines. At the start of the trip the crew, using a 180-fathom beach seine, was successful in obtaining satisfactory amounts of suitable bait in six hours of fishing.

Scooping under night lights for young tuna was carried out whenever the vessel was drifting.

Louisiana

COMMERCIAL FISHERIES PRODUCTION: Shrimp Fishery: The 1953 production of shrimp (heads on) by Louisiana fishermen and the shrimp taken in Louisiana waters and processed in Mississippi amounted to 437,340 barrels (91.8 million pounds). This was an increase of 10 percent over the production of 398,953 barrels (83.8 million pounds) in 1952, and 12 percent greater than the 1946-52 annual average production of 391,517 barrels (82.2 million pounds).

Table 1 shows the shrimp production (heads-on) and the type of processing by areas. Shrimp taken in Louisiana, principally Orleans, St. Bernard, and Plaquemines parishes, for processing in Mississippi plants was utilized principally for

Table 1 - Louisiana Shrimp Production by Area and Type of Processing, 1952-53

Area of Production	Amount Utilized for: Whole	Headless	Canned	Dried	Cooked & Peeled	Total
	(Barrels, Heads on)					
	1953					
La. Shrimp Processed in Mississippi	-	3,872	21,814	-	-	25,686
French Market	46,127	95	-	-	-	46,222
New Orleans Area, St. Bernard, and Plaquemines Parish	308	25,275	20,805	164	-	46,552
Lafourche Parish	1,147	65,436	3,597	-	96	70,276
Terrebonne Parish	756	47,038	28,797	22,045	15,877	114,513
Jefferson Parish	2,324	52,322	16,269	4,698	80	75,693
St. Mary and all other Parishes to Texas Line	-	56,296	264	112	1,726	58,398
Total 1953	50,662	250,334	91,546	27,019	17,779	437,340
	1952					
La. Shrimp Processed in Mississippi	-	12,168	20,303	-	-	32,471
French Market	35,259	-	-	-	-	35,259
New Orleans Area, St. Bernard, and Plaquemines Parish	-	12,876	18,102	107	-	31,085
Lafourche Parish	74	48,371	925	800	206	50,376
Terrebonne Parish	651	54,382	37,446	31,409	18,292	142,180
Jefferson Parish	483	23,322	16,480	3,694	172	44,151
St. Mary and all other Parishes to Texas Line	202	60,216	1,674	58	1,281	63,431
Total 1952	36,669	211,335	94,930	36,068	19,951	398,953

Note: To convert to pounds heads-on basis multiply barrels by 210 pounds. To convert to pounds heads-off basis multiply barrels by 125 pounds.

canning. The French Market area where shrimp is sold heads on for bait and home consumption drew its supplies principally from Orleans, St. Bernard, Plaquemines, and Jefferson parishes. The New Orleans, St. Bernard, and Plaquemines area shrimp taken in these parishes and processed in plants in and around New Orleans was utilized principally for canning and fresh and frozen headless. The Jefferson parish area shrimp produced and processed in that area was utilized principally for fresh and frozen headless but substantial quantities were also canned, dried, and marketed cooked and peeled. The shrimp from the other three areas (Lafourche, Terrebonne, and St. Mary parish to the Texas line) was taken and processed in those parishes and utilized principally as fresh and frozen headless. Wherever a plant processed shrimp taken in parishes other than the one in which it was located, credit for production of such shrimp was given to the parish in which the shrimp was taken.

The dried shrimp industry in Louisiana for many years utilized the major portion of the shrimp production. Over 100,000 barrels of shrimp used to be utilized for drying, but dried shrimp production has decreased. The lowest production in the history of Louisiana was reported in 1953 when only 27,020 barrels of shrimp were dried. Because of the increased demand for frozen shrimp and the drop in the demand for dried shrimp, more of the catch is being utilized as fresh and frozen headless shrimp.

In 1953 a total of 473 tons of shrimp meal were produced in Louisiana with a value at the manufacturers' level of $40,205.

Oyster Fishery: During the calendar year of 1953, a total of 793,074 barrels of oysters (equivalent to 3,172,296 pounds of meats) were taken from Louisiana waters, while in 1952 the take was 885,716 barrels (3,542,864 pounds of meats).

Menhaden Fishery: The menhaden catch in Louisiana waters in 1953 totaled 610 million pounds, valued at $6.5 million ex-vessel. In 1952 the catch was somewhat higher, 702 million pounds, but in 1951 the catch was only 401 million pounds. Of the 1953 catch, 460 million pounds were processed in Louisiana plants, 75 million pounds in Texas plants, and 75 million pounds in Mississippi plants.

Other Fisheries, 1952/53: The catch of the minor salt- and fresh-water fish and shellfish (excluding the salt-water shrimp, oyster, and menhaden) in Louisiana by commercial fishermen during 1952/53 (July-June) amounted to 23,825,611 pounds, valued at $4,136,053 ex-vessel, according to the Fifth Biennial Report of the Louisiana Wild Life and Fisheries Commission 1952-1953 (see table 2). This is an in-

Table 2 - Louisiana's Commercial Fish and Shellfish Production (Excluding Shrimp, Oysters, and Menhaden), 1952/53 and 1951/52 1/

Species	1952/53		1951/52	
	Quantity	Value	Quantity	Value
Salt-Water Fisheries:	Lbs.	$	Lbs.	$
Drum, black	252,710	15,163	228,734	11,437
Flounders	200,668	50,167	76,546	19,137
Mullet	467,754	32,743	744,766	44,686
Redfish (red drum)	291,539	72,885	167,851	41,963
Red snapper	66,645	15,661	35,164	7,736
Sheepshead	62,152	4,351	66,272	4,639
Sea trout, spotted	436,867	131,060	427,170	128,151
Other fish	393,283	43,261	175,916	17,592
Crabs, hard	8,190,800	491,447	5,503,625	275,181
Crabs, soft	277,347	88,751	125,807	37,742
Crab meat	354,215	318,794	19,997	15,997
Sea turtles	19,486	1,169	28,241	1,694
Total Salt-Water	11,013,466	1,266,452	7,600,089	606,955

Species	1952/53		1951/52	
	Quantity	Value	Quantity	Value
Fresh-Water Fisheries:	Lbs.	$	Lbs.	$
Buffalofish	2,866,589	458,654	3,502,533	560,405
Catfish	5,631,218	1,633,054	7,549,866	2,113,962
Garfish	534,575	32,075	683,294	34,165
Gaspergou (sheepshead)	1,316,516	197,492	2,432,422	340,539
Spoonbill catfish	469,325	70,399	231,183	27,742
Miscellaneous	176,978	17,698	245,396	24,540
Crayfish (crawfish)	1,489,821	372,455	174,776	43,694
Frogs	126,852	57,083	33,057	13,223
Shrimp, river	34,946	17,473	35,950	17,975
Turtles	165,225	13,218	67,515	4,051
Total Fresh-Water	12,812,145	2,869,601	14,955,992	3,180,296
Grand Total	23,825,611	4,136,053	22,556,081	3,786,251
	Pieces	$	Pieces	$
Baby green turtles	1,760,229	146,627	812,992	67,722

1/ July 1-June 30.

crease of 6 percent in volume and 9 percent in value as compared with the 1951/52 production of 22,556,081 pounds, valued at $3,786,251, due mainly to the large increase in the catch of hard-shell crabs. (The figures do not include a small production of baby green turtles.)

The catch in Louisiana's salt-water fisheries--exclusive of shrimp, oysters, and menhaden--in 1952/53 amounted to 11,013,466 pounds, valued at $1,266,452; up 45 percent in volume and 109 percent in value as compared with the 1951/52 production of 7,600,089 pounds, valued at $606,955. In both seasons hard-shell crabs were by far the leading item landed in the minor fisheries, comprising 74 percent of the total in 1952/53 and 72 percent in 1951/52. Of the finfish varieties, mullet, speckled sea trout, redfish or red drum, in that order, were the leading items caught in 1952/53.

Louisiana's fresh-water fisheries yielded a total of 12,812,145 pounds, valued at $2,869,601, in the 1952/53 season, a drop of 14 and 10 percent, respectively, compared with the 1951/52 production of 14,955,992 pounds, valued at $3,180,296. There were lighter catches of all the leading varieties, with the exception of the crawfish catch which increased considerably. In the 1952/53 season catfish comprised 44 percent of the total catch of the fresh-water fisheries, buffalofish 22 per-

cent, crawfish 12 percent, and gaspergou or sheepshead 10 percent. Catfish was also the leading item in 1951/52, making up 50 percent of the total, followed by buffalofish 23 percent, and gaspergou or sheepshead 16 percent.

Massachusetts

GLOUCESTER MENHADEN LANDINGS GREATEST IN RECENT YEARS: The 1954 menhaden season at Gloucester was the most successful since the return of this species to New England waters a few years ago, the Service's representative at Gloucester reports. Menhaden landings at Gloucester in 1954 totaled 35.4 million pounds as compared with 20.0 million pounds in 1953 and 25.8 million pounds in 1952. During the 1954 season the ex-vessel price ranged from $1.15-1.40 per hundredweight.

Although landings of fish not for human consumption began to increase in September, the price rose from $17.50 to $20.00 per ton ex-vessel.

However, most processing firms prefer menhaden to the so-called "trash" species because the menhaden are cleaner and are more uniform in size. The "trash" species vary from the huge monkfish and skates down to small whiting and hake.

Michigan's Great Lakes Commercial Fish Production, 1953

Commercial fishermen landed a total of 25 million pounds of fresh-water fish from the Great Lakes at Michigan ports during 1953 (see table), reports the Michi-

Michigan's Great Lakes Commercial Fish Production, 1953 by Lakes

Species	Quantity					Landed Value
	Lake Michgan	Lake Superior	Lake Huron	Lake Erie	Total	
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	$
Lake herring	3,045,656	2,415,391	1,427,747	-	6,888,794	439,469
Smelt	4,164,506	130	210,681	-	4,375,317	166,684
Chubs	3,545,507	25,435	105,969	-	3,676,911	647,033
Carp	19,069	11	1,360,781	1,183,209	2,563,070	108,121
Lake trout	286	1,746,158	-	-	1,746,444	698,600
White and redhorse suckers	432,730	23,438	1,134,212	22,417	1,612,797	100,608
Lake whitefish	857,905	430,490	153,069	-	1,441,464	664,183
Yellow perch	636,054	193	458,484	65,397	1,160,128	174,030
Yellow pike	286,740	284	177,145	383,451	847,620	191,368
Catfish	1,156	-	333,103	19,194	353,453	82,169
Bullheads	10,253	-	28,658	39,507	78,418	8,574
Northern pike	31,760	180	36,779	7,826	76,545	11,239
White bass	-	-	3,692	41,513	45,205	4,948
Sheepshead	8,783	-	6,874	19,316	34,973	1,225
Rock bass	1,763	14	21,039	7,421	30,237	4,158
Menominees	7,518	4,565	11,264	-	23,347	4,539
Longnose suckers	13,260	139	9,602	-	23,001	1,408
Bowfin	4	-	15,617	6,603	22,224	891
Sturgeon	5,154	166	1,488	-	6,808	4,781
Sauger	60	68	906	4,262	5,296	639
Burbot	151	116	364	35	666	28
Gizzard shad	-	-	71	-	71	1
Total Quantity	13,068,315	4,646,778	5,497,545	1,800,151	25,012,789	-
Total Landed Value	$1,558,264	$1,039,388	$590,428	$126,616	-	$3,314,696

gan Department of Conservation. The total landed value amounted to $3.3 million. In 1952 the total production was over 29 million pounds.

Lake Michigan was the leading production area and accounted for 52 percent of the total catch, followed by Lake Huron with 22 percent, Lake Superior 19 percent, and Lake Erie 7 percent.

Lake herring was the leading species in volume caught by Michigan commercial fishermen in the Great Lakes in 1953 with a total of 6.9 million pounds, but 4.1 million pounds less than in 1952 when 11.0 million pounds were landed. Other species were landed in about the same volume as a year earlier with only slight increases and decreases in the individual items.

Winter gill-net fishing in Great Lakes.

Note: Also see Commercial Fisheries Review, June 1953, p. 23.

Michigan

PERCH POPULATION INCREASES: A bounteous yellow perch population is reported this year by Michigan's Great Lakes commercial fishing fleet, according to a recent bulletin from the Michigan Department of Conservation.

Yellow perch

The huge crop has caused a drop in prices and fishermen are urging that now is the time to make use of one of nature's most productive moments. Many fishermen sell the fish retail in bulk or by the pound from docks at dozens of Great Lakes ports.

On Lake Michigan last year. the greatest supplies of yellow perch came from Escanaba, Fayette, Garden, Muskegon, Saugatuck, and South Haven. On Lake Huron the ports of greatest supply were AuGres, Bay Port, Pinconning, Quanicassee, Sebewaing, and Standish.

National Tuna Week

Over one-half billion cans of tuna (more than three cans per person) will be consumed in the United States in the next year, according to trade estimates. The recent trend in tuna production, with each year's pack exceeding that of the previous year and setting a new total pack record, seems due to be continued this year. Based on the latest available statistics, the 1954 pack up to October was developing at a slightly faster rate than in 1953 when the total U. S. supply (domestic pack plus imports) was approximately 12 million cases or about 600 million cans.

During National Tuna Week, November 4-13, member companies and the sponsoring Tuna Research Foundation conducted a special advertising campaign of product advertisements in nationally-distributed grocer and food merchandising journals, and in daily newspapers. Members of allied industries simultaneously released tie-in advertising. Point-of-sales material and recipe pads were made available by both of these groups to retail outlets throughout the United States.

In observance of National Tuna Week, the Fish and Wildlife Service released as its recipe of the month, Tuna Pie. This recipe was issued in an Interior Department press release which was sent to about 1,000 home economists, food editors, and restaurant and institutional dietitians throughout the United States who have requested this regular recipe Service. In additon, tuna will continue to be one of the basic fishery items featured in the Service's school-lunch and other institutional fish-cookery demonstrations.

North Pacific Exploratory Fishery Program

GOOD COMMERCIAL FISHERY POTENTIAL IN PRINCE WILLIAM SOUND REPORTED BY "JOHN N. COBB" (Cruise 20): Favorable results were obtained by the Service's exploratory fishing vessel John N. Cobb on a three-months' cruise to investigate the commercial potentialities for bottom fish, shrimp, and king crab in the Prince William Sound area of Alaska. The vessel returned to Seattle, Wash., on September 16--actual fishing operations were carried on from July 13 to September 8.

The John N. Cobb, a vessel operated by the Service's Branch of Commercial Fisheries, is conducting exploratory fishing in the North Pacific.

Standard commercial otter-trawl nets were used in fishing operations for bottom fish, and a total of 88 drags was made with this gear. Fishing results revealed that commercial quantities of Pacific ocean perch were available in offshore waters adjacent to Prince William Sound. Catches of 1,100 to 6,000 pounds per hour of this species were made off Middleton Island at depths from 79 to 112 fathoms. In the area 12 to 24 miles south of Point Elrington at 90 to 122 fathoms, from 2,300 to 3,200 pounds of Pacific ocean perch and up to 1,000 pounds of sablefish were taken per one-hour drag. Drags inside the 50-fathom contour from near Cape Hinchinbrook to off the Copper River caught up to 1,800 pounds of starry flounder per hour. English sole were encountered frequently in this area, but 125 pounds per drag was the best catch. Otter-trawl drags were also made in various areas of Prince William Sound proper, but only small catches of various species of commercially desirable bottom fish were encountered. Small numbers (up to 14 per drag) of marketable-size king crab were frequently present in drags in this area. The largest king crab weighed 17 pounds.

Areas fished for shrimp included Orca Bay, Port Gravina, Port Fidalgo, Valdez Arm, Port Valdez, College Fiord, and Montague Strait. A 20-foot beam trawl was the principal gear used, although shrimp traps were also fished. A total of 90 beam-trawl drags was made and 69 individual shrimp traps were set. Favorable shrimp catches were made in Orca Bay with 5 of the best drags in this area (at 58 to 122 fathoms) averaging 212 pounds per hour, mostly pink shrimp of commercial size. In Port Gravina the best drag caught 310 pounds of commercial-size pink shrimp per hour. In the Montague Strait area 282 pounds of commercial-size pink shrimp per hour were taken off Graveyard Point. Only a few shrimp were taken by traps.

A total of 92 individual king crab pots was set in various areas of Prince William Sound. The best results were obtained in College Fiord where 9 pots at 43 to 68 fathoms for 23 hours caught a total of 41 marketable size king crabs and in Esther Passage where 9 pots at 52 to 90 fathoms for 20 hours caught a total of 30 marketable-size king crabs.

Oregon

OTTER-TRAWL MINIMUM MESH SIZE SET FOR DOVER SOLE: A minimum mesh size of 4.5 inches (measured between the knots) was adopted by the Fish Commission of Oregon to become effective in 1954. This regulation was the result of studies by the states of Oregon, Washington, and California under the auspices of the Pacific Marine Fisheries Commission, a coordinating body for mutual fishery problems of the three states.

Cooperative mesh experiments were conducted aboard the California Fish and Game's research vessel N. B. Scofield in the early summer of 1954. Earlier studies had also been made. These experiments were designed to determine, if possible, a mesh size that would minimize the waste of young sole at sea. In the catches made with experimental nets, the proportion of marketable fish in the total catch ranged from 31 percent with a 3-inch mesh to 98 percent with a 4.5-inch mesh. However, for any single mesh size the percentage of marketable fish in the catch varied, presumably owing to change in size composition of fish on the grounds.

From studies of the discard at sea by commercial vessels, the average discard of Dover sole in 1953 was estimated to be 25 percent by number. In making this estimation, the various mesh sizes used by members of the Oregon fleet have been taken into consideration.

The otter-trawl fishery of Oregon produces some 20 to 30 million pounds of bottom fish annually. This represents approximately 25 to 30 species of flat and round fish. During the postwar years the Dover sole (Microstomus pacificus) has been the principal flatfish sought by the fishermen. An average of approximately 4 million pounds of this species was landed annually in the period 1946-52. The peak year was 1951, during which 8.5 million pounds were landed.

The fillet plants impose a minimum size upon each species of sole that they purchase, basing these sizes on a profitable return of filleted meat from the whole fish. The fishermen in turn select for their nets a mesh size that will insure the capture of all, or practically all, the sole equal to and larger than these minimum sizes. Unfortunately, the selective action of the nets is such that a considerable number of fish smaller than the minimum size are also caught and must be sorted from the catches and discarded at sea. Most, if not all, of these fish are dead when discarded.

The total catch of Dover sole in Oregon for the period 1946-52 was 33.1 million pounds, equivalent to 16.6 million fish. If 25 percent is a reasonable estimate of the discard at sea, 5.5 million small Dover sole were wasted during this 7-year period.

As most of these discarded fish would have reached a marketable size in 2 or 3 years, and were capable of doubling their weight in 5 years, the loss to the fishermen was significant.

It is believed that this minimum-mesh-size regulation will materially help the fishermen to utilize their fishery resource more economically.

Note: Also see Commercial Fisheries Review, October 1954, p. 24.

Pacific Oceanic Fishery Investigations

DEFECTIVE STEEL LONG LINES RESPONSIBLE FOR POOR COMMERCIAL TUNA CATCHES IN LINE ISLANDS ("Oceanic" and "Brothers" Cruise 2; "Commonwealth" Cruise 1): Defective steel long-line gear was responsible for poor tuna catches by commercial vessels in the Line Islands area. The commercial vessels exploiting these new tuna grounds sailed from Honolulu on July 14 and returned August 21--the Oceanic and Brothers are 48- and 49-foot Alaska halibut boats and the Commonwealth is a 110-foot converted sailing schooner.

The steel long-line gear handled well but did not retain enough of the hooked tuna to produce satisfactory catches. This was evident from broken droppers, leaders covered with slime from fish that had escaped, and wear and tear on the main line out of proportion to the size of the catches. Further, a break-link test suggested that less than one-third of the hooked fish were landed. It appeared that the steel did not have enough resilience, nor did it offer enough friction when pulled through the water to effectively dampen the frantic struggle of a freshly hooked tuna. As a consequence fish were frequently lost or the gear was broken.

The three vessels fished a total of 29 vessel days, mainly in the near vicinity of Christmas Island although fishing was conducted as far as 70 miles offshore. Each vessel averaged about 500 hooks a day with a total of about 14,700 hooks for the trip.

Fishing yielded 240 yellowfin tuna of which 32 or 13 percent were damaged by sharks. The over-all catch rate was 1.63 per hundred hooks. The average weight of the catch was about 100 pounds and the total catch of the 3 vessels about 10 tons.

There were some differences in the catch rates of the three vessels. The Commonwealth and Oceanic averaged about 2 yellowfin tuna per 100 hooks and the Brothers only 1 per 100 hooks.

The yellowfin tuna catch was comprised of two size groups of fish; a smaller group averaging about 60 pounds each probably represented surface schools, and a group averaging about 125 pounds each probably drawn from the deep-swimming population.

In addition to the long-line fishing, four vessel days were devoted to trolling around Christmas Island. This fishing yielded 30 yellowfin tuna averaging 60 pounds each in weight.

The captain of the Commonwealth expressed the opinion that, despite the disappointing catch made by his vessel, there were tuna to be taken on the Christmas Island grounds if the right type of fishing gear were used. He said that he plans to modify his long-lines in such a way as to put more play into them and then make another cruise south in the near future.

This venture, which was only the second attempt at commercial exploitation of the equatorial tuna grounds explored and charted by research ships of the U. S. Fish and Wildlife Service's Pacific Oceanic Fishery Investigations, produced a total of about 10 tons of yellowfin tuna and small amounts of marlin and miscellaneous fish. The catches were far below the averages established by experimental fishing in the area, and also compared very poorly with the results of an earlier commercial operation by West Coast boats. This lack of success was all the more unlooked for since the data gathered by Pacific Oceanic Fishery Investigations show the summer months as the season when the yellowfin tuna are at the peak of their abundance on the equatorial grounds.

The Fish and Wildlife Service biologist, who acted as observer with the Commonwealth, expressed the opinion that the poor catches must be blamed on the fishing gear used, which was of steel cable instead of the usual cotton line. He estimated that one-half to two-thirds of all the fish hooked were lost through the breakage of the branch lines or by the tearing of the hooks from the tuna's jaws.

Pacific Salmon Investigations

ELECTRICAL DIVERSION WEIR PROVES PRACTICAL FOR SALMON: An electrical diversion weir that the U. S. Fish and Wildlife Service installed on an experimental basis on the Entiat River in Washington during 1953 has made it possible to divert a sufficient number of the adult chinook salmon into holding ponds for spawning.

Patterned after the installations made for the control of the sea lamprey in the Great Lakes, the electrical diversion weir placed in the Entiat River consists of 50 electrodes (pipe, $1\frac{1}{2}$ inches) that are suspended vertically at 3-foot intervals at an angle across the stream. A ground line (pipe, $1\frac{1}{2}$ inches) has been laid 15 feet below the electrodes, following the bottom contour of the stream and parallel to the line of electrodes. The electrical field is activated by 110-volt, 60-cycle, alternating currents.

A fishery research biologist stationed at the Salmon-Cultural Laboratory at Entiat reports that the new diversion weir has provided an adequate barrier to the upstream migration of fish during high- and low-water stages of the river.

Chinook salmon were diverted into the holding ponds much more readily by the electrical barrier than by the conventional picket weir. The longest time a recognizable fish fought the barrier before entering the ladder was two days. Blueback salmon were more reluctant to ascend the fish ladder and enter the holding ponds. Schools of 50 or more fish were observed to collect in a pool area about 200 feet below the diversion. These fish entered the ponds well ahead of their spawning time. A total of 46 steelhead were diverted into the holding ponds. Of this group, 39 were seined or fished out and liberated above the weir and 7 males died in the ponds because they escaped capture. An estimated 500 suckers spawned in the ponds. Surprisingly enough, the suckers were successful in making their escape through the V's and returned to the river. A large number of whitefish, possibly 300 to 400, entered the ponds during the spring. Some of these fish were liberated during the seining operations for steelhead, but at least half of these fish remained in the holding ponds throughout the summer and are still in the ponds. Very few trout other than large Dolly Varden trout were diverted into the ponds. The majority of this species entered the trap along with the salmon and were liberated in the river above the weir.

While the electrical diversion weir is in operation, fish that enter the field are ordinarily diverted before they pass the ground line or after they have progressed about two feet over the ground line. The location of the ground line, with reference to stream bottom and distance from the electrodes, has been established by tests to determine effectiveness in diverting upstream migrants without injury.

The weir will be used only to get fish for the spawn-taking operations at the fish-cultural station at Entiat. In accordance with the Fish and Wildlife Service's policy of utilizing any available natural spawning areas, a significant portion of the run will be permitted to escape.

Service to Collect Holdings of Frozen Blocks

The Bureau of the Budget has granted permission to the U. S. Fish and Wildlife Service to collect data on the cold-storage freezings and holdings of fillet blocks and slabs used in the production of fish sticks or portions. These data will be collected monthly, beginning with October 31, 1954, and will be published in the Frozen Fish Report, a monthly statistical bulletin issued from Washington, D. C.

Shrimp Film Released by Fish and Wildlife Service

An educational film titled Shrimp Please, sponsored by the U. S. Fish and Wildlife Service and the shrimp industry of Louisiana and Mississippi, was made available for showings in late September.

Some scenes from the motion picture, Shrimp Please.

Designed to stimulate consumer interest in shrimp, the film depicts Gulf of Mexico shrimping operations, canning, breading, drying, and freezing processes, and the many methods of preparing shrimp for the dinner table. Release of the picture is aimed at creating additional markets for shrimp.

Produced in sound and color, the 16 mm. film has a running time of about 18 minutes. Previews for the sponsoring groups have been completed. Wide distribution of prints is planned. More than 100 copies will be available for public showings and television use. Distribution to the 60 film libraries which handle Service-sponsored films will be made, and special emphasis will be placed on TV outlets.

Prints of Shrimp Please will be available without charge on a loan basis for showing in the United States from the Fish and Wildlife Service, U. S. Department of the Interior, Washington 25, D. C. Further information and facts on other films in the commercial fisheries series will be found in a booklet titled Fishery Motion Pictures which may be obtained from the Service.

South Carolina

OYSTER RESEARCH (APRIL-JUNE 1954): Much of the oyster research at the South Carolina Bears Bluff Laboratories involves the measuring and weighing of individual oysters or groups of oysters to determine growth and survival. Such measurements can be successfully continued through the cold months but by mid-May an almost continuous setting of young on the experimental oysters seriously interferes with accurate measurements. In years past workers at the Laboratory tried many deterrents in hopes of finding a practical means of protecting these experimental oysters from "wrap-up." DDT, anti-fouling paint, wax, oils, etc., have been tried with varying degrees of success.

This spring an attempt was made to utilize cement as a possible means of deterring or reducing the set of young oysters on the experimental oysters. The theory was that the cement would flake off as the young attached, thus leaving the original oyster clean and unencumbered by successive sets of young.

In these experiments about 200 adult oysters were treated with varying mixtures of cement ranging from pure cement and water, to three parts of mud and one part of cement. About 50 oysters were selected as controls and were left in the experimental trays without handling or dipping in the cement or cement mixture. Of these, 1.6 percent died during the time of the experiment. About 50 oysters were removed from trays, handled, and exposed to drying but were not treated with cement. About 20 percent of these died. One hundred oysters were handled, dipped in cement and left exposed to the air until the cement had dried (usually overnight). Of these 91.1 percent of the oysters died. This indicates that cement is too drastic a treatment to use to protect experimental oysters. One interesting feature of the experiment which deserves further examination is the death of 20 percent of the oysters which were not treated with cement but only handled, culled, and exposed to air.

SHRIMP RESEARCH: Offshore Waters: A total of 91 standardized trawls were made at fixed stations during the period April-June to gauge the relative abundance of shrimp by months in offshore waters, sounds, bays, and in rivers of South Carolina. Size variations and growth of shrimp in both the commercial catches and in the experimental trawls were carefully watched. Since the first part of June studies on the composition of commercial shrimp catches have been intensified and work on the selectivity of nets and gear was renewed.

Salt Water Ponds: Continuing experiments on the productivity of impounded salt-water ponds, the smallest of the ponds at Bears Bluff was lightly stocked with white shrimp (Penaeus setiferus) on February 24, 1954. The pond was emptied on May 4. Briefly, this experiment showed that 37 percent of the shrimp died during this time but growth more than balanced mortality, and for every pound of shrimp stocked $1\frac{1}{2}$ pounds of shrimp were taken out. This growth in excess of mortality is much less than found in previous experiments carried out in the summer. There are two possible explanations: (1) slow growth due to colder water (average water temperature for March and April--20° C.; for July and August--31° C.); and (2) the larger size of the shrimp stocked for this experiment (96 count as against 500 to even 700 count in some of the previous warm-weather experiments). The size increase during this experiment was about $1-1\frac{1}{2}$ inches. The average length of the February shrimp stocked was $4-4\frac{1}{2}$ inches; the average length of the May shrimp harvested was $5\frac{1}{2}-6$ inches.

This experiment, if converted into economic terms, indicated that for every 30 cents worth of shrimp stocked in February, despite mortality, 75 cents worth of shrimp was harvested in May. The price of shrimp comparable in size to those stocked on February 24 was 30 cents a pound; shrimp comparable in size to those harvested on May 4 was 50 cents a pound.

Biologically it is of great interest to note that the majority of shrimp harvested had fairly mature gonads--males with well developed spermataphores and the females in the yellow and brown stage of roe development. It should be noted that this development took place in inshore, impounded waters, ranging in salinity from a low of 22.5 p.p.t. to a high of 28 p.p.t. It should be further noted that this gonadal development is not necessarily a result of impoundment in the experimental pond since at the time of harvesting of the pond shrimp, female P. setiferus with well developed roe were being taken in trawl nets in the Wadmalaw River near the pond. The salinity of the Wadmalaw River is practically identical with that found in the experimental ponds.

South Pacific Fishery Investigations

MOVED TO LA JOLLA, CALIFORNIA: The South Pacific Fishery Investigations of the Service's Branch of Fishery Biology moved their headquarters from Stanford University to La Jolla, California, on the campus of the University of California's Scripps Institution of Oceanography.

The change of headquarters will allow a closer coordination of research activities of a cooperative study of California marine resources. Major emphasis of the study is on the Pacific sardine and associated species, such as the anchovy, jack mackerel, Pacific mackerel, and hake.

Other participants in this program are the California Department of Fish and Game, the California Academy of Sciences, and Hopkins Marine Station of Stanford University.

Several members of the South Pacific Fishery Investigations have been located at Scripps Institution's annex at Point Loma for the past five years.

U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JULY 1954: United States imports of fresh, frozen, and processed edible fish and shellfish during July 1954 amounted to 82.5 million pounds (valued at $17.9 million), according to the July 1954 United States Foreign Trade, a Department of Commerce publication (see table). July imports were 16.7 percent higher in quantity but 11.0 percent lower in value when compared with the previous month's imports of 70.7 million pounds (valued at $20.1 million). Compared with a year earlier, July imports were higher by 10.1 percent in quantity but lower by 6.3 percent in value.

United States Foreign Trade in Edible Fishery Products, July 1954 With Comparisons

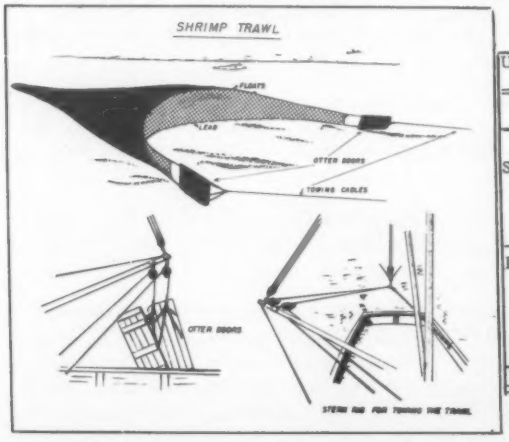
Item	July 1954		July 1953		Year 1953	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 Lbs.	Million $	1,000 Lbs.	Million $	1,000 Lbs.	Million $
IMPORTS:						
Fish & shellfish: Fresh, frozen & processed 1/	82,458	17.9	81,806	19.1	724,656	193.2
EXPORTS:						
Fish & shellfish: Processed 1/ only (excluding fresh and frozen)	3,268	0.8	3,988	1.1	58,920	14.4

1/ Includes pastes, sauces, clam chowder and juice, and other specialties.

Exports of processed edible fish and shellfish (excluding fresh and frozen) in July 1954 totaled 3.3 million pounds (valued at $0.8 million)--higher by 53.8 percent in quantity and 14.2 percent in value as compared with June exports of 2.1 million pounds (valued at $0.7 million). July exports were down 18.1 percent in volume and 27.3 percent in value as compared with a year earlier.

U. S. Shrimp Supply and Disposition, 1953

The total United States supply of shrimp in 1953 amounted to 307.4 million pounds (heads on), composed of 235 million pounds caught by United States fishermen and 72.4 million pounds imported (see table). This is an increase of 5 percent as compared with the supply of 291.8 million pounds in 1952, and 19 percent higher



U. S. Shrimp Supply and Disposition (Round Weight--Heads On), 1950-53

Item	1953 1/	1952 1/	1951	1950
	. . (In Thousands of Lbs.) . . .			
Supply:				
Catch (Round Weight)	235,000	227,220	224,316	191,474
Imports (Round Weight)	72,397	64,629	70,262	67,533
Total.	307,397	291,849	294,578	259,007
Disposition:				
Canned	58,620	46,730	44,955	41,918
Dried.	8,000	8,000	8,000	8,000
Frozen	167,651	157,037	168,700	156,000
Fresh	73,126	80,082	72,923	53,089
Total	307,397	291,849	294,578	259,007

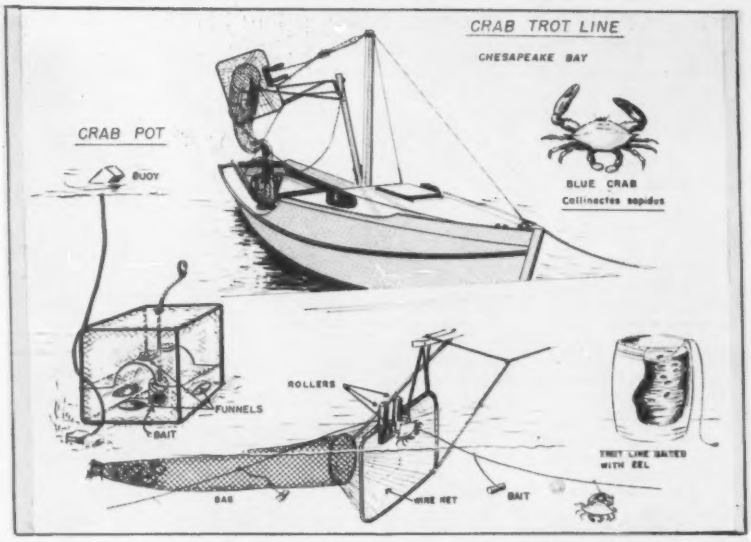
1/ Preliminary.

than 1950 when a supply of 259.0 million pounds was available. There has been a steady increase each year in the catch of shrimp, while imports have increased each year except in 1952.

Frozen shrimp comprised 55 percent of the total supply in 1953, fresh shrimp 24 percent, canned shrimp 19 percent, and dried shrimp 2 percent. In 1950 the shrimp supply was disposed of as 60 percent frozen, 21 percent fresh, 16 percent canned, and 3 percent dried.

Virginia

BLUE CRAB CATCH DOWN: The September catch of blue crabs in Virginia was poor, the Virginia Fisheries Laboratory announced recently. Hurricane "Edna," though it caused no catastrophic damage in the Chesapeake region, did result in the loss of many crab pots, and fishing effort was reduced as a consequence.



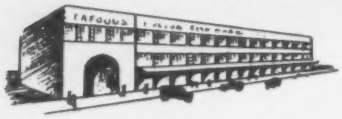
Another factor is contributing to the poor crab landings this fall--there is every indication that the 1953 year-class of crabs is below average abundance. A poor season for the winter dredge fishery of 1954/55 is predicted.

Wholesale Prices, September 1954

With production moderate and demand good, September wholesale prices for fishery products continued their upward movement. The September 1954 over-all edible fish and shellfish (fresh, frozen, and canned) wholesale index was 113.9 percent of the 1947-49 average (see table)--2.5 percent above August and 8.6 percent higher than a year earlier.

The partial continuation of the tie-up of Boston's offshore fishing fleet the first part of September was responsible for the rise of 3.9 percent in the ex-vessel prices for offshore drawn large haddock at Boston; these prices were 45.6 percent higher than in September 1953. Except for lower prices of fresh king salmon at New York City, all other items under the drawn, dressed, or whole finfish subgroup were priced higher in September than in August. The last of the fresh Pacific halibut appear-

ing on the market in September brought higher prices, but this did not actually reflect the halibut market as a whole since frozen halibut prices were a shade lower than in August. Fresh-water fish prices in September were considerably higher because of the Jewish holidays. The September index for the drawn, dressed, or whole finfish subgroup was 7.9 percent above August and 28.2 percent above the same month in 1954.



The fresh shrimp price drop of 9.9 percent at New York City in September was attributed to liberal supplies. Shrimp prices have been dropping steadily since last March and in September were 26.6 percent below the same month in 1953. With the opening of the season on September 1, oyster prices dropped slightly. Lower shrimp and oyster prices only partially offset the very substantial increase in prices of fresh haddock fillets from August to September. The subgroup index for fresh processed fish and shellfish in September was 2.4 percent below August and 10.1 percent lower than in the same month of 1953.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, September 1954 and Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices1/ ($)		Indexes (1947-49=100)			
			Sept. 1954	Aug. 1954	Sept. 1954	Aug. 1954	July 1954	Sept. 1953
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					113.9	111.1	103.5	104.9
Fresh & Frozen Fishery Products:					124.8	120.1	109.8	112.3
Drawn, Dressed, or Whole Finfish:					144.9	134.3	119.3	113.0
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.17	.16	167.3	161.0	119.0	114.9
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.45	.32	139.3	99.0	106.0	92.3
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.57	.58	127.5	130.4	128.4	114.2
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.58	.53	142.5	131.4	105.4	154.9
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.75	.65	151.6	131.4	119.3	148.6
Lake trout, domestic, No. 1, drawn, fresh	Chicago	lb.	.53	.53	108.6	107.6	104.5	97.3
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.55	.49	129.0	114.9	143.0	140.7
Processed, Fresh (Fish & Shellfish):					104.5	107.1	98.7	116.2
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.41	.34	139.5	114.0	74.8	112.3
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.49	.55	77.4	85.9	93.3	105.4
Oysters, shucked, standards	Norfolk	gal.	5.13	5.25	126.8	129.9	111.3	129.9
Processed, Frozen (Fish & Shellfish):					91.6	93.9	97.6	101.4
Fillets: Flounder (yellowtail), skinless, 1-lb. pkg.	Boston	lb.	.39	.39	100.8	100.8	100.8	108.7
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.31	.31	95.7	95.7	100.4	93.0
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.28	.28	111.3	111.8	116.8	104.7
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.49	.52	74.8	80.2	84.1	101.1
Canned Fishery Products:					97.7	97.7	94.2	94.0
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	case	19.70	19.70	104.4	104.4	99.1	93.9
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	case	13.25	13.25	95.5	95.5	94.1	95.5
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans/cs.	New York	case	6.70	6.70	71.3	71.3	69.2	81.9

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

Frozen fillet prices in September remained steady at August levels. But frozen shrimp prices continued to decline because of heavy inventories--prices dropped 6.7 percent from August to September and were 26.0 percent lower than a year earlier when inventories were very light. The September subgroup index for processed frozen fish was 2.4 percent lower than the previous month and 9.7 percent below September 1953.

Prices for the canned fish included in the index remained steady at August levels, but the September index for the subgroup was 3.9 percent higher than a year earlier. Compared with the same month a year ago, prices this September for canned pink salmon were up 11.2 percent, but for canned Maine sardines they were down 12.9 percent. Canned tuna this September was selling at the same prices as in September 1953.

CANNED TUNA--A YEAR-ROUND FAVORITE

During this busy holiday season of the year, the wise homemaker will depend more and more on versatile canned tuna which is abundant, relatively inexpensive, and can be used in a variety of ways whether the occasion calls for a casserole, salad, sandwiches, or a party dish. A supply of canned tuna on your pantry shelf will solve many of your menu problems.

Two cans of tuna will make this excellent casserole dish recommended by the home economists of the U. S. Fish and Wildlife Service. This hearty meal-in-a-dish is as tasty as it is eye appealing.

TUNA PIE

2 7-ounce cans tuna
1 cup cooked carrots
1 cup cooked peas
1 10-ounce can condensed cream of chicken soup
1/2 cup water
1 cup biscuit mix

Drain and flake tuna. Combine tuna, carrots, and peas. Place in a well-greased casserole. Combine soup and water; heat. Pour over the tuna mixture. Prepare biscuit as directed. Drop by teaspoonful on top of the tuna mixture. Bake in a hot oven (450° F.) for 30 minutes or until biscuit topping is brown. Serves 6.

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International

SOUTH AMERICAN COUNTRIES DISCUSS SOUTH PACIFIC FISHERY PROBLEMS

The Colombian official press bureau issued a statement by the Secretary General of the Foreign Office on September 20, 1954, to the effect that the Government of Chile has invited representatives of the governments of Peru and Ecuador to attend a meeting in Santiago, Chile, in October to study the problem of the exploitation and conservation of the maritime resources of the South Pacific, states a U. S. Embassy dispatch (September 22) from Bogota. The statement added that as Colombia had indicated an interest in the subjects to be discussed at the Santiago meeting, the diplomatic representatives in Bogota of the Chilean, Peruvian, and Ecuadorian governments had called upon the Colombian Foreign Minister. During this visit, it had been stated to the Foreign Minister that the three other governments would view with special satisfaction the adherence of Colombia to the basic agreements that they had previously reached on the subject. The Foreign Office statement concluded that the Ministry was studying the question.

Although the provisions of the "basic agreements" between the governments of Peru, Ecuador, and Chile are not known, extensive jurisdiction over territorial waters may be involved.

EUROPEAN NATIONS FAVOR THREE-MILE TERRITORIAL LIMIT

The three-mile territorial limit from low-water mark should be maintained universally was the unanimous opinion of a conference of European nations called by the Belgian Trawler Owners' Association in Ostend, Belgium, August 27.

The conference also expressed its willingness to meet Icelandic representatives for talks on Iceland's extended territorial limit to seek a solution satisfactory to all concerned.

The conference was attended by representatives of Great Britain, France, Belgium, Holland, and Western Germany and it was called to discuss recent extensions of fisheries limits.

It was the unanimous conclusion that the system by which territorial waters are fixed at three miles from low-water mark should be carried on universally. It should only be varied in the interests of conservation of fishing grounds and with the mutual agreement of the interested parties.

It was also felt that a meeting with Icelandic representatives would be a good thing to see if a solution satisfactory to all could be found on that country's new limits.

The question of an international federation of trawler owners was also discussed and the delegates were to report back to their respective organizations, according to the September 3 issue of The Fishing News, a British trade paper.

RUSSIA AND POLAND ALLOW FOREIGN FISHING INSIDE 12-MILE LIMIT

The Soviet Union and Poland are now allowing Swedish and Danish trawlers to fish within the 12-mile limit of their territorial waters in the Baltic, the president of the Blekinge Fishermen's Association said on August 30. Most of the fishermen trawling off Poland, Lithuania, Latvia, and Estonia are organized in the Blekinge Fishermen's Association.

"A bare month ago," he added, "the Polish and Russian patrols would have arrested Scandinavian vessels fishing in these waters. Now they even exchange information with them about the location of the best shoals," reports the September 3 Fishing News, a British fishery paper.

"This 'Operation Friendship' in the Baltic can mean new prosperity for Swedish fishermen who, through Russia's decision in 1950 to extend her waters from 4 to 12 sea miles, were excluded from some of the richest shoals."

NORTHWEST ATLANTIC FISHERIES COMMISSION

FOURTH ANNUAL MEETING AT HALIFAX, N. S.: The fourth annual meeting of the International Commission for the Northwest Atlantic Fisheries was held at the Commission's new headquarters in Halifax, N.S., from June 14 to June 18. Dr. Stewart Bates, Deputy Minister of Canada's Department of Fisheries, who was elected at last year's annual meeting for a two-year term, presided over the plenary sessions.

Reports presented at the meeting indicated that the Commission's long-range scientific program for the investigation of the fisheries resources of the Northwest Atlantic was proceeding satisfactorily and that much progress was being made in cordinating the efforts of all participating countries to obtain an accurate picture of what was happening to the fish stocks on the deep-sea fishing grounds.

For instance, up until last year when the Commission compiled its first annual catch totals, it was never known exactly how many tons of cod, haddock, halibut, and redfish (ocean perch)--the main species--were captured by the 10 nations fishing these waters, despite the fact that the banks had been fished for centuries. The collection of such statistics is a monumental task since each country has a different method of recording their catches and different units of weight. In any program of conservation, an accurate picture of the total catch is a basic requirement.

Preliminary figures compiled by the Commission showed that in 1953 a total of 1,190,111 metric tons of groundfish (2,203 million pounds) was taken by the 10 countries fishing the Northwest Atlantic (see table). While this was some 100,000 metric tons lower than in 1952, the Commission was advised that there was no cause for alarm because the reduced catches resulted from economic factors and not from a scarcity of fish.

Groundfish Landings from the International Convention for Northwest Fisheries Area by Countries, 1953

Country	Subarea 1	2	3	4	5	Not Indicated	Total 1953	Total 1952
	(Metric Tons, Round Fish)							
Canada	-	11,127	233,268	161,647	76	-	406,117	463,761
Denmark	48,513	-	-	-	-	-	48,513	64,835
France	19,980	27,493	22,415	43,082	-	-	112,970	142,647
Iceland	26,253	-	-	-	-	-	26,253	48,070
Italy	-	-	-	-	-	14,293	14,293	12,164
Norway	32,016	-	-	-	-	-	32,017	22,832
Portugal	54,503	40,265	56,142	13,205	-	-	164,114	134,408
Spain	2,981	14,852	89,524	2,914	-	-	110,272	102,643
United Kingdom	35,039	810	560	-	-	-	36,410	58,581
United States	-	-	33,652	47,957	157,544	-	239,153	279,565
Total 1953	219,285	94,547	435,561	268,805	157,620	14,293	1,190,112	
Total 1952	254,190	53,777	401,582	268,973	180,549	170,436		1,329,506

The Commission, which was established in 1951, is based on a Convention signed in Washington in 1949 by 10 countries carrying out fisheries in the Northwest Atlantic area. Members of the Commission are Canada, Denmark, France, Iceland, Italy, Norway, Portugal, Spain, the United Kingdom, and the United States. Its aim is to investigate, protect, and conserve the fisheries of the Northwest Atlantic Ocean to make possible the maintenance of an optimum sustained catch from those fisheries. The Convention Area includes all waters, except territorial waters, off the North American coast from Rhode Island in the south to the west coast of Greenland and east to a north-south line from Cape Farewell to Greenland. For practical purposes the area is divided into five subareas, each of which has a panel set up to carry out the objectives of the Commission. Delegates from the countries interested in the fisheries of the corresponding subareas are members of these separate panels.

The meeting in Halifax did not produce any new recommendation for regulating fisheries nor was there any radical change made in the scientific program agreed upon by all countries last year. The results of the large-mesh regulation for the haddock fishery in subarea 5 (the George's bank area) were assessed and consideration given to extending it to other areas. The only change in the membership of the five panels was the admission of Spain to a seat on Panel 2 which is concerned with the fisheries off Labrador. All countries were represented at the meeting except Italy and Iceland.

Perhaps one of the more important developments, as far as the scientific program is concerned, was the decision to establish an advisory group of scientists to coordinate a research program for subarea 3 which includes the fishing grounds of the Newfoundland banks and adjacent waters.

The plan to set up an advisory group in subarea 3 was outlined in the report of Panel 3 submitted to the Commission by its chairman.

The report indicated that a great deal of information about the Newfoundland fishing banks has been accumulated in recent years through the individual efforts of fisheries experts of Canada, France, Spain, and the United States. A lengthy report on research conducted into the cod, haddock, redfish (ocean perch) and American plaice in the subarea was tabled. The United States reported that it was concentrating on ocean perch research in the subarea because the catch of this species had risen from zero in 1950 to 74 million pounds in 1953. Difficulties were encountered in research because no way had been found to satisfactorily tag ocean perch.

The Commission also received reports from the four other panels. Panel 1, which is concerned with the waters off the west coast of Greenland, reported that the present condition of the stocks of fish did not call for the introduction of any regulation of the fishery. Reports of investigations were reviewed at the meeting of the panel and it was agreed that countries such as Iceland which have begun fishing on the nearly virgin stock of ocean perch in the southern part of the subarea should be asked to sample for length, age, and sex of the commercial catches of the species. It was also agreed to ask Iceland to take panel membership in Panel 1.

The report of the meeting of Panel 2 noted that the total catch for all countries in this subarea showed a large increase from 54,000 metric tons of round fish in 1952 to 95,000 metric tons in 1953. Catches by Spain had increased while Portugal took 40,000 tons of cod in the subarea in 1953. The panel did not set up a scientific advisory group and deferred the question of the elaboration of a detailed research program until the scientific advisers for the adjacent Panel 3 had reported.

Panel 4 reported that no recommendation was being made to the Commission at this time to extend the regulation now in effect in subarea 5 with regard to minimum mesh size in otter trawls. The scientific advisers to the panel, while agreeing that such a regulation would be beneficial in subarea 4, wanted to make a more thorough analysis of existing data and to complete some experiments now in progress on the selectivity of small otter trawls and line fishing gear.

Panel 5's report to the Commission was featured by a review of the effects of the large-mesh regulation which went into force in subarea 5 last year. The chairman of the scientific advisers to the panel said that boats using the large-mesh nets were catching larger fish and in greater quantities than boats using small-mesh gear. The large-mesh nets release the small, undersized haddock that are retained by the small-mesh nets and subsequently discarded by the fishermen.

The United States discussed the problem of the effect of the regulation on vessels that are engaged in lucrative fisheries for other species. The analysis of data disclosed that among vessels of less than 50 gross tons there was no undue hardship placed on the fishermen. The exemption of vessels of 50 gross tons and over would result in an exemption of 10 percent of the catch. The theory of exemption was given considerable discussion. Canada urged that the principles upon which the regulation of a fishery be based should be presented to the Commission by the panel. It was unanimously agreed that the following principles be considered:

1. In regulating a fishery there should be no exemption of vessels that are fishing solely for the species being regulated.

2. Any exemption should be kept under continual review to insure that the percentage of the landings exempted do not increase to the point where the benefits of the regulation are greatly reduced.

In a review of the status of the fishery, the United States reported on the trend in the landings of cod, haddock, and ocean perch during 1953. The research work on haddock abundance, haddock food studies, drift of haddock eggs and larvae, ocean perch abundance, and the study of age and growth of ocean perch was outlined.

In addition to the panel reports, the Commission received and approved the reports of the Standing Committee on Research and Statistics and the Standing Committee on Finance and Administration.

The Standing Committee on Research and Statistics held several meetings to review the many scientific reports dealing with the progress being made in the over-all research program. Special reference was made in the Committee's report to the extensive review of the present knowledge of the hydrography of the Convention Area which had been prepared for the Commission by Dr. H. B. Hachey, Chief Oceanographer, Canadian Joint Committee on Oceanography, in collaboration with Dr. F. Hermann of the Danish Institute for Fishery Investigations, and W. B. Bailey, oceanographer of the Atlantic Oceanographic Group. In approving the report of the subcommittee for cod and haddock investigations, the Committee made special reference to the increasing tendency of European vessels to fish in the Convention Area and the Commission's attention was drawn to the great desirability of securing information about the catches taken in the Area and the effort exerted there by nations not at present adhering to the Convention.

Dr. Gunnar Rollefsen of Norway, chairman of the subcommittee on cod and haddock, reported that European countries not signatory to the Convention have already started fishing in the Greenland and Newfoundland areas and it must be expected that the intensity of these fisheries will increase in the coming years, causing a growing toll on the stocks. The over-all reduction in the size of cod and haddock caught there will have an important bearing on the conversion of existing salt fishing to other methods of processing, such as frozen fillets and fish meal.

The Committee expressed its appreciation for the work done by the scientists of the United States and Canada in substantially establishing sound information on the rate of growth of ocean perch in the area.

Several problems in connection with the collection of statistical data were dealt with by the Committee and its recommendations were adopted by the Commission.

Plans were made for a coordinated tagging program in the Convention Area this summer. Thousands of cod and haddock will be bearing small tags of one kind or another which, when recovered, will convey vital information to the Commission. Tagging involves fixing to the live fish a mark with numbers and letters. It

may be a colored plastic strip, or a tube of colored celluloid, with a paper inside, attached by wire or nylon. Or it may be a black ebonite disk attached to the gill cover.

The fish are apparently insensitive to tags, and tagging by these methods has been standard procedure among fisheries scientists for years. Illustrated posters showing a fish with various tags are to be displayed in fishing centers in the 10 countries participating in the Convention and fishermen are asked to watch for tagged fish and report their capture to the nearest fisheries official. In this way they will be helping the Commission in its studies.

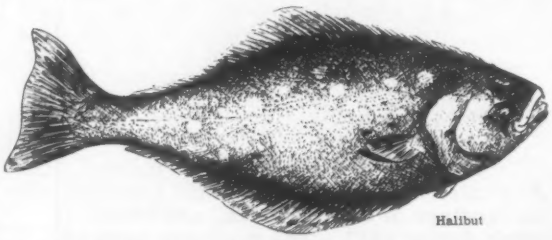
Although tagging cod presents no problem to fisheries scientists, and success has been recently achieved with haddock, it has not yet been possible to evolve a method of tagging ocean perch. These fish, which have become increasingly important as a source of raw material for the fish-filleting industry, live in deep water and when brought to the surface suffer severe effects from the changing pressure. Some way has to be found to tag the fish in their natural habitat and scientists are giving ocean perch tagging studies a high priority in future research plans.

The Commission unanimously agreed to hold its fifth annual meeting in Ottawa. It was pointed out that all countries represented has embassies in Ottawa and the opportunity of bringing them in touch with the work of ICNAF was very desirable. The meeting will open on the second Monday of June 1955.

PACIFIC HALIBUT COMMISSION

HALIBUT CATCH IN 1954 BREAKS RECORD: United States and Canadian halibut landings on the Pacific coast this year were expected to amount to about 70 million pounds, almost 10 million pounds more than were landed during all of 1953, the International Pacific Halibut Commission reports. By November 15 (after which time the landing of any halibut is prohibited) the catch will probably exceed 70 million pounds and be greater than the long-standing record of 68.8 million pounds established in 1915 when the fishery was still exploiting virgin stocks in the Gulf of Alaska.

Under the unrestricted fishing of those earlier years, the annual catch declined rapidly to about 50.0 million pounds in spite of constantly increasing fishing and expansion to new grounds. In 1931, when fishing had extended clear into the Bering Sea, a nine-months' fishing season was required to secure a catch of only 44.2 million pounds. Fishing became unprofitable.


Halibut

The Commission has managed the halibut fishery under treaties between the United States and Canada since 1932. By controlling the amount of fishing, it has improved the stocks, made fishing more and more profitable, and made possible the taking of larger and larger annual catches. In 1952 and 1953, under careful regulation, annual catches averaged 61.8 million pounds, an increase of 17.5 million pounds over the catch taken by the unrestricted fishery in 1931. This was as much as the Commission could safely allow to be taken from the banks under the treaty limitation which confined fishing to a single season of the year.

The new halibut treaty ratified last year permitted the Commission to establish more than one season in any area so that advantage could be taken of stocks which afforded the best fishing at different times of the year. This treaty change had been urged by the Commission since 1946. Under the new flexible authority, this year's

regulations provided such additional open seasons as the Commission believed could be established without depleting the stocks. They resulted in the present increase in catch.

The ultimate goal of the Commission is to secure the greatest possible annual yield that the banks are capable of producing year after year. To maintain such a stablized production on a high level requires allowances for the natural year-to-year variations which appear to be inevitable in ocean fisheries. Hence, although the Commission is pleased with the greatly increased catch, it recognizes that it must carefully analyze the effect upon the stocks and must continue experimentation as the only practical way to know what is happening.

The 1954 catch will be 25.0 million pounds greater than the annual total in 1931, the year preceding regulation. At present dockside prices to the fishermen, the gain for this year alone is worth about $4,250,000. This is three times the entire amount of money appropriated to the Commission by both countries from the time of its creation in 1923.

The International Pacific Halibut Commission reports that the recently announced all-time record halibut catch of 70 million pounds is worth over $14,000,000 at wholesale prices. The catch as landed was worth over $11,000,000 to 670 regular halibut vessels and 600 small boats and to the 4,000 fishermen that manned them.

With the closure on September 9 of the last regular halibut fishing season in the far western Alaska grounds (including Bering Sea) and in the waters off southern Oregon and northern California, it is now evident that the 1954 total catch will be slightly over 70 million pounds. Small quantities of halibut will continue to be landed under permit until November 15 by set-line vessels fishing for other species.

When regulation began 23 years ago, the catch was only 44 million pounds and a nine-months season of fishing was required to make the catch. Under the halibut commission's management there has been such a progressive improvement of the stocks that the present 70-million-pound catch was taken in about 2 months of fishing.

The accumulated gain in production over the 1931 preregulation level now totals nearly 250 million pounds of halibut, worth over $35,000,000 to the fleets at the prices that prevailed during the period. In addition to this direct gain, the reduced time required to take the increased catch has left the fleets free to engage in other fisheries or other activities. This saving of effort has been worth at least an additional $20,000,000 to the fishermen.

The combined economic gain of over $50,000,000 has resulted from appropriations to the Commission of $1,750,000 by both countries combined during the entire 30 years of its existence. Canada and the United States have indeed enjoyed an extremely high return from their investment.

The increase in halibut production in the regulated Pacific Coast fishery is in sharp contrast to what has occurred in unregulated fisheries elsewhere. Reduced fishing due to World War II gave European banks a chance to recuperate, but the catch from the unregulated European halibut fishery has now declined from a post-war 1950 high of 31 million pounds to about 20 million annually. Over the same 5-year period the Canadian Atlantic catch has declined from 10 million to under 5 million pounds. The New England catch that many years ago amounted to as much as 13 million pounds annually has been at or well below one-half million pounds during the past decade.

As a result of these production declines in the unregulated fisheries and the increase in the controlled Pacific fishery, the Pacific catch this year will represent about 75 percent of the world halibut production as compared to 58 percent in 1950.

Regulation of the Pacific halibut fishery and all investigations of the fish stocks by the Commission (including the tagging of nearly 55,000 halibut) have been accomplished with very modest annual appropriations from each government, ranging from $25,000 in 1935 to $50,000 at present. This increase in funds has been more than offset by the decline in purchasing power during the same period.

The increase in the number of halibut vessels whose catches must be checked from 250 to 670 and the increased complications arising from the subdivision of areas and the increased number of open seasons required to get the greatest production from the different stocks, all demand increased research and supervision at substantially increased cost in order to be effective. No such increases have been appropriated.

PACIFIC SALMON FISHERIES COMMISSION

FRASER RIVER SOCKEYE SALMON CATCH SETS NEW RECORD: The 1954 Fraser River sockeye salmon catch up to the latter part of September totaled 9,369,000 fish--Canadian fishermen had taken 4,586,900 fish and United States fishermen 4,782,100 fish. This catch already exceeds the total catch in any year since 1913 and is expected to break all records for its own 4-year cycle since the fishery began over 75 years ago, according to a recent report from the International Pacific Salmon Fisheries Commission.

At a meeting held in New Westminister on September 23 the Commission discussed with its scientific staff the current sockeye management program on the Fraser River and the Gulf of Georgia. After considering the data presented the Commission voted that it wished to relinquish control of all sockeye fishing in Canadian Convention waters at 6:00 p.m., Saturday, September 25, thus returning control of all further fishing activity for the year 1954 to the Canadian Department of Fisheries.

Although the Commission is concerned with obtaining adequate escapement of late-season Fraser sockeye races other than the Adams stock, some escapement to these areas has already occurred and the Department's regulations for protection of salmon species other than sockeye will adequately provide for any needed additional spawning stock. For that reason further control of the 1954 fishing regulations by the Commission beyond the above specified date is not required nor is it considered desirable in view of the currently increasing runs of chum, spring, and coho salmon, the Comission pointed out.

The Adams River run normally does not need assistance at Hell's Gate because its late migration coincides with passable low-flow conditions. This year, however, the abnormal runoff throughout the season indicates that, without the fishways, the 1954 escapement of Adams River sockeye would, in all probability, have been entirely destroyed at Hell's Gate.

TRADE AGREEMENTS

ICELANDIC-CZECH TRADE AGREEMENT INCLUDES FISH: A trade and payments agreement between Iceland and Czechoslovakia signed in Reykjavik on August 31 includes fish. The trade agreement is valid for a period of three years, and the commodity lists are in force September 16, 1954-August 31, 1955, and subject to renegotiation annually. The trade agreement provides for a considerable expansion of trade between the two countries. The principal commodity that Iceland will export is quick-frozen fish fillets--a total of 6,000 metric tons as against 3,000 tons provided for in the previous agreement.

Because of the poor herring season, the quantity of herring to be exported by Iceland was decreased from 7,000 metric tons in last year's agreement to 2,000 tons this year. A new item for the 1954 agreement is fish meal--a total of 500 metric tons is to be exported to Czechoslovakia. Iceland will also export a small quantity of canned fish.

There are no fishery products among Czechoslovakia's exports to Iceland.

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DANISH-WEST GERMAN AGREEMENT INCLUDES FISHERY PRODUCTS: The Governments of Denmark and the German Federal Republic, on December 18, 1953, concluded a trade agreement which includes some fishery products. Denmark will ship to West Germany the following fishery products: Fresh and frozen salt-water fish and other quota fish products, valued at DM6.5 million (US$1.5 million); salted herring from Faeros Islands, DM300,000 (US$71,000); marine animal oils, DM8.4 million (US$2 million). West Germany will export to Denmark miscellaneous fishery products valued at 450,000 kroner (US$65,000).

WHALING

INTERNATIONAL WHALING COMMISSION SIXTH ANNUAL MEETING: The Sixth Meeting of the International Whaling Commission convened at Tokyo, Japan, July 19 and was concluded on July 23, 1954. At this meeting the Commission (1) approved the expenditures for 1953/54 and the budget for 1954/55; (2) considered recommendations made by its standing committees; (3) adopted amendments to the Schedule annexed to the 1946 International Convention for the Regulation of Whaling; and (4) determined that its seventh meeting should be convened at Moscow on July 18, 1955.

Participation and Committees: The countries represented by Commissioners were the United States of America, Australia, Brazil, Canada, Denmark, France, Japan, Mexico, the Netherlands, New Zealand, Norway, Panama, Union of South Africa, Sweden, Union of Soviet Socialist Republics, and the United Kingdom. Iceland was not represented.

Italy, Chile, Argentina, and Portugal were represented by observers, as were the Food and Agriculture Organization of the United Nations (FAO), and the International Council for the Exploration of the Sea (ICES). Due to a delay in the transmission of instructions, Peru was not represented.

The United States Commissioner, Dr. A. Remington Kellogg, Director of the U. S. National Museum, Washington, D. C., was assisted by William M. Terry, Fish and Wildlife Service, U. S. Department of the Interior, Washington, D. C., and Comdr. J. P. Martin, U. S. Coast Guard.

The major items, both of a technical and procedural nature, were referred for study to the three standing committees (Scientific, Technical, Finance and Administration) and the reports of these committees, after a joint meeting of the Scientific and Technical Committees had been held, were considered by the Commission at subsequent plenary sessions.

Summary of the Work of the Conference: On the recommendation of standing committees, a number of decisions were taken, including:

(1) The financial and administrative arrangements will continue to be handled during 1954/55, in accordance with previous recommendations of the Finance and Administration Committee, by the Ministry of Agriculture and Fisheries, United Kingdom, and in accordance with Document IB revised. The office of the Commission will be located in the Ministry of Agriculture and Fisheries, 3 Whitehall Place, London, S.W.1; the staff, apart from the Secretary of the Commission,

will be provided on a part-time basis by the Fisheries Department of the Ministry of Agriculture and Fisheries, and the financial arrangements will continue to be handled by the Finance Division of the Ministry.

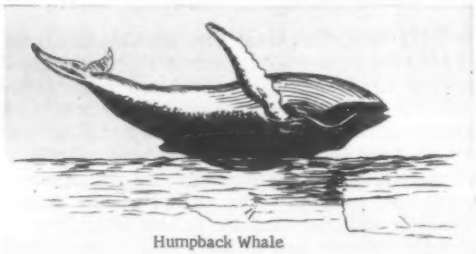
The Commission approved the table on income and expenditure for the past fiscal year and the budget for the next fiscal year.

(2) The Commission reconstituted its Special Scientific Subcommittee, providing for membership by one technical person and, in addition to giving it broad instructions, referred to it specifically the question of whale marking and the question of establishing separate catch limits for the different species.

(3) The Commission recommended that the use of aircraft for the killing of whales be brought within the scope of the Convention, and resolved that the necessary approach be made to the Depository Government.

(4) The Commission accepted and resolved to bring to the attention of Member Governments that part of the report of the Technical Committee dealing with infractions.

(5) The Commission amended the Schedule to the Convention so as to (a) prohibit the taking of blue and humpback whales in the North Pacific Ocean for a period of five years; (b) prohibit the taking of blue whales in the eastern half of the North Pacific for a period of five years; (c) prohibit the taking of humpback whales in Area II in the Antarctic for a



Humpback Whale

period of five years; (d) delay the opening of the pelagic whaling season 1954/1955 in the Antarctic to January 7 for fin whales, and January 21 for blue whales; (e) permit Contracting Governments to declare separate open seasons for land stations used for the purpose of treating minke whales where such land stations are in areas having distinctly different oceanographic conditions. These amendments will enter into force only after acceptance by the Member Governments.

(6) The Commission took note of the possible need in the future for a drastic reduction in the over-all catch limits.

Review of 1953/54 Season's Catch: Mr. Vangstein (Norway), reporting for the Bureau of International Whaling Statistics, summarized the results of the 1953/54 season at the First Plenary Session.

During the pelagic season 1953/54 in the Antarctic, there were in operation 17 factoryships and 3 land stations with 227 whale catcher boats. Total production of oil in the Antarctic amounted to 2,285,526 barrels, including 144,518 barrels of sperm oil. Of this total, the land stations produced 184,647 barrels.

This oil production represented an increase of 167,429 barrels over the previous year, which, at 6 barrels to the metric ton, amounted to 27,905 metric tons.

Outside the Antarctic in the year 1953, the output was 397,836 barrels as compared with 429,670 barrels in 1952; and at 6 barrels to the ton represented an output in 1953 of 66,306 tons.

The Commission was advised that pelagic whaling in the Antarctic terminated on midnight March 18, 1954. By that date, 15,439 blue-whale units[1/] had been taken, that is 61 blue-whale units under the authorized total of 15,500. The catching of humpbacks was permitted on the first four days of February. During that period 594 humpbacks were taken, a decrease of 355 under the Antarctic humpback catch of the previous year.

The catch of whales in areas II and III of the Antarctic constituted 77 percent of the total taken during the 1953/54

1/One blue-whale unit = 1 blue whale, or 2 fin whales, or 2.5 humpback whales, or 6 sei whales.

season. Of the 28,500 whales taken in the Antarctic, 2,684 were blue whales and 251 sei whales, equivalent to 15,448.9 blue-whale units. In no other season since pelagic whaling commenced, except during the war years, has the catch of blue whales been so low. Conversely, the catch of finbacks during the 1953/54 season exceeded that of all previous seasons with the exception of that of 1937/38.

Since 1925/26, approximately 255,000 blue whales and 307,000 finbacks have been captured by pelagic expeditions.

Background: The Commission was established in accordance with the International Convention for the Regulation of Whaling which was signed at Washington, December 2, 1946, and which entered into force November 10, 1948. It is the responsibility of the Commission as conditions warrant, to amend the provisions of the Schedule annexed to the 1946 Convention, which are, in effect, the regulations governing the conduct of whaling by the Contracting Governments. These regulations relate to the conservation and utilization of whale resources and include fixing (a) protected and unprotected species; (b) open and closed seasons; (c) open and closed waters, including the designation of sanctuary areas; (d) size limits for each species; (e) time, methods, and intensity of whaling (including the maximum catch of whales to be taken in any one season); (f) types and specification of gear and apparatus and appliances which may be used; (g) methods of measurement; (h) catch returns and other statistical and biological records.

The Commission is also charged with the responsibility for taking action, either independently or in collaboration with other governments and public or private agencies to: (a) encourage, recommend, or if necessary organize studies and investigations relating to whales and whaling; (b) collect and analyze statistical information concerning the current condition and trend of whale stocks and the effects of whaling activities thereon; (c) study, appraise, and disseminate information concerning methods of maintaining and increasing populations of whale stocks.

* * * * *

"OLYMPIC CHALLENGER" WHALING FLEET SAILS FOR PERUVIAN WATERS: The last of the 12 whaling boats of the Olympic Challenger whaling fleet has left Kiel, Germany, for Peruvian waters. The whaling factoryship Olympic Challenger is to follow the boats and after operating in Peruvian waters for three months the fleet will go on to the Antarctic, reports the August 13 issue of The Fishing News. The fleet is owned by a Greek-born Argentine millionaire shipowner. Tankers of the shipowner's vessels will transfer the whale oil from the Olympic Challenger on the high seas and refuel the whaling factoryship.

Considerable publicity has been given in Panama about the threatened action by Ecuador and Peru against this Panamanian-registered whaling fleet. Reports indicate that this whaling fleet will be operating off the coasts of Ecuador and Peru within the 200-mile limit over which the two nations claim jurisdiction, points out a September 8 United States Embassy dispatch from Panama City. Panama's attempts to obtain Peru's acquiescence in the whaling operations apparently were unsuccessful.

According to press reports the Government of Peru warned the expedition that if it engaged in activities within that country's "200-mile maritime zone" its vessels would be seized or fired upon. The fleet's owner disputed Peru's claim to jurisdiction 200 miles seaward, and advised that his fleet is armed and will resist attempts to interfere with the expedition.

Another whaling fleet, French-Norwegian, about to start out for the same Pacific waters, reportedly adopted to remain in its home port until it learns what happens to the Olympic Challenger expedition. Press dispatches which reported regarding this second fleet added that the International Court of Justice may be requested to rule on Peru's claim of jurisdiction over 200 miles of water off its coast.

Ecuadorans, long concerned because of the "piracy" of foreign tuna boats which have fished in Ecuadoran territorial waters without first buying proper licenses, immediately took sides in the matter.

The resolutions adopted by Chile, Peru, and Ecuador at the tripartite Fisheries Conference held at Santiago, Chile, in August 1952, were not ratified by Ecuador. These resolutions included claim to the right of jurisdiction over 200 miles. One of Ecuador's reasons for not submitting the final act of the Santiago Conference to Congress at once for early ratification probably was that, because of sensitiveness over the Peruvian border situation, it did not care to support Peru in the matter. Now, however, the Ecuadoran Minister of Economy, who has jurisdiction in fishery matters, has stated that with Congress in session the time is propitious for Ecuador to ratify.

The Ecuadoran Foreign Office, prompted by the latest developments, issued a communique stating that Ecuador has taken the decision to "obtain respect for its sovereignty over waters within its jurisdiction and issued appropriate orders to the Navy to see that Ecuadoran rights in such waters are respected." The communique adds that "faithful to its international policy on this matter, and in line with the resolutions approved at the 1952 Santiago Conference, (Ecuador) is prepared to collaborate in the adoption of such joint measures on the part of the participating Governments as may be deemed necessary to defend the icthyological wealth and to conserve the natural resources of the South Pacific.

Angola

STATUS OF THE FISHERIES: The waters along the Angolan coast are adjacent to the Benguela Stream, and a wide variety of fish abounds in them, states an August 12 United States consular dispatch from Luanda. Fish landed in Angolan ports in 1953 amounted to 222,434 metric tons as against 187,046 tons in 1952.

There was a substantial increase in most processed fishery products and byproducts (table 1).

Table 1 - Angolan Production of Processed Fishery Products & Byproducts, 1952-53

Product	1953	1952
	.. (Metric Tons)..	
Canned fish	1,914	1,764
Dried fish	34,085	31,986
Fish meal	41,949	28,488
Fish guano	366	669
Fish oil	6,175	2,456

Table 2 - Angolan Exports of Fishery Products and Byproducts, 1953

Product	Quantity	Value		% of
	Metric Tons	Million Escudos	Million US$	Total Value of Exports
Fish meal	1/ 46,902	167.6	5.8	4.8
Fish oil ..	8,336	34.3	1.2	0.9
Canned fish	1,415	23.0	0.8	0.6
Dried fish	16,089	80.5	2.8	2.3
Total ...	72,742	305.4	10.6	8.6

1/ 29,533 tons exported to the United States.

Exports during 1953 of fish meal, fish oil, canned fish, and dried fish amounted to 72,742 tons, valued at 305.4 million escudos (US$10.6 million). Exports for each product are shown in table 2.

Notable increases in exports occurred in fish meal and fish oil. The former increased from 29,032 tons, valued at 94.7 million escudos (US$3.3 million), in 1952 to 46,902 tons, valued at 167.6 million escudos (US$5.8 million), in 1953. Fish oil exports rose from 2,663 tons, valued at 12.5 million escudos (US$0.4 million), in 1952 to 8,336 tons, valued at 34.3 million escudos (US$1.2 million), in 1953. Most of the fish meal was shipped to the United States and Germany; fish oil to Germany; canned fish to Portugal and the United States; and dried fish to the Belgian Congo, Mozambique, and French Equatorial Africa.

Note: Values converted on the basis of one paper escudo equals 3.49 U. S. cents.

Australia

FISHERIES CATCH, 1952/53: The total catch of the Australian fisheries in 1952/53 amounted to 114 million pounds, according to the June 1954 issue of the Fisheries Newsletter, an Australian trade magazine. Mullet with a catch of 14.0 million pounds comprised 18 percent of the total catch, followed by barracouta with 9.5 million pounds, "Australian salmon" 8.1 million, shark 7.6 million, and flatheads 6.7 million pounds. The Australian spiny lobster catch in 1952/53 totaled 15.7 million pounds and the shrimp catch 3.3 million pounds.

Canada

LOBSTER TRAP REGULATIONS REVISED: Stricter enforcement of the minimum lath spacing of lobster traps to cut down the taking of undersized lobsters is contemplated by the Canadian Department of Fisheries in revised lobster regulations passed recently under Order-in-Council.

The revised regulations make it an offense for any person to use or possess in any of the lobster-fishing districts in the Bay of Fundy area of New Brunswick and Nova Scotia, the southeast coast area of Nova Scotia, and part of the southeast coast of Cape Breton Island, lobster traps which do not have a continuous and unobstructed space measuring at least 1-5/8 inches between the two undermost laths on each side of the trap.

In the Guysborough and Halifax area on Nova Scotia's east coast, most of Cape Breton Island (except that part previously mentioned), in Northumberland Strait, the Bay of Chaleur, and the Gulf of St. Lawrence, the regulations call for minimum lath spacing of $1\frac{1}{4}$ inches.

The lobster fishing areas are now specified as numbered districts in the new regulations, which cover Nova Scotia, New Brunswick, Prince Edward Island, and Quebec.

The revised lobster legislation designed to bring about stricter enforcement of the regulations is part of the Department's over-all campaign against illegal lobster fishing which has become a serious problem in some parts of Canada's Maritime Provinces, reports the August Trade News, a Department of Fisheries publication.

Coupled with an intensified enforcement campaign, the Department has also inaugurated a program of education. Officials discussed lobster problems in Kent and Westmorland counties of New Brunswick and impressed upon lobster fishermen that the regulations are designed to conserve and protect lobster stocks and that continued poaching and the taking of undersized lobsters will only jeopardize their own livelihood.

In 1953 Canada's Maritime lobster catch was 42,007,000 pounds, and had a value of C$14,585,000 to the fishermen. This does not include the lobster catch in Newfoundland which last year was 4,330,576 pounds, valued at C$1,109,121.

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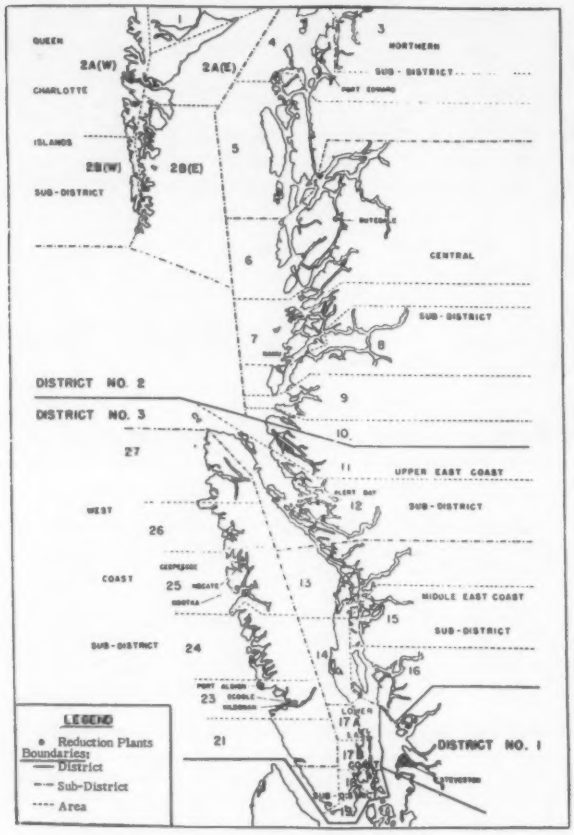
BRITISH COLUMBIA HERRING FISHERY PROSPECTS, 1954/55: The tenth in an annual series of circulars Prospects for the 1954/55 Herring Fishing Season, Circular No. 34, dealing with the prospects of the British Columbia herring fishery, was issued by the Pacific Biological Station of the Fisheries Research Board of Canada at Nanaimo, B. C. Various studies of the adult herring populations form the

basis of these annual predictions of the success of fishing. Predictions are given by area.

The salient parts of the predictions appearing in the report follow:

West Coast Subdistrict (Areas 23-27): While the catch should be better in the more southerly areas than in the more northerly areas, it is considered unlikely that as good catches will be made on the west coast in 1954/55 as in 1953/54.



Map showing the division of the British Columbia coast into districts, sub-districts, and areas.

Lower East Coast Subdistrict (Areas 17A, 17B, and 18): Although some decrease in abundance can be looked for in 1954/55, the general level of abundance is expected to remain relatively high, and the 40,000-ton quota should be taken readily. The average size of the fish will probably be greater than last year.

Middle East Coast Subdistrict (Areas 13 and 14): In 1951/52, the middle east coast stocks reached a high level of abundance but decreased slightly in 1952/53. However, because of the negligible fishery, a large carryover to the 1953/54 season resulted. In 1953/54 a summer fishery dependent on schools which apparently did not migrate to offshore feeding grounds developed in Area 14, and produced over 8,000 tons. Recruitment is believed to occur mainly to those stocks which migrate to offshore feeding grounds. A quota extension of 10,000 tons was granted to allow for the exploitation of these stocks. This quota extension was filled, resulting in the largest catch on record for the subdistrict as a whole.

Spawn deposition in the spring of 1954 was the lowest since 1948/49; a reduction of 30 percent from the 1953 level occurred in the subdistrict as a whole and spawning in Area 14, the major spawning area, was reduced by almost 45 percent. It would appear, therefore, that the record catch of 1953/54 has reduced the level of abundance from the high level attained between 1949/50 and 1951/52.

In the summer of 1954 a fishery again developed in Area 14 and a catch of 4,000 tons was taken by the end of July, probably largely from resident herring stocks. It seems likely that the main migratory stock was not exploited, and for this reason it is expected that the balance of the quota will be taken from migratory fish passing through Area 13 in the fall. In view of the indications that the recruitment of the 1952 year-class and the contribution of the 1951 year-class as four-year-old fish will not be particularly large, greater fishing effort may be required to take the quota than last year.

Upper East Coast Subdistrict (Areas 11 and 12): Present indications are that the increase in abundance in 1952/53 was sufficient to return the stock approximately to the average level of recent years. In 1953/54 the stock was sustained almost entirely by the strong contribution of the 1951 year-class as three-year-old fish. The contributions of 1953 and 1952 year-classes as one-and two-year-old fish were among the lowest recorded in recent years.

It does not appear likely that in 1954/55 any increased catch can be expected in the fishery in this subdistrict and it is unlikely that with the usual amount of fishing effort the quota will be taken. The average size of the fish will probably be slightly larger than in 1953/54.

Central Subdistrict (Areas 6, 7, 8, 9, and 10): Population abundance in the major stocks in this subdistrict was somewhat greater in 1953/54 than in 1952/53; a catch of 31,650 tons was taken and spawn deposition, although slightly less than the preceding year, was about average. The 1951 year-class entered both the Area 7 and the Area 6 (Meyers Pass) fisheries strongly as three-year-old fish. The 1950 year-class made a relatively small contribution as four-year-old fish and indications are that while it is stronger than the weak 1949 year-class it is certainly not of more than average strength. The 1952 year-class, as two-year-old fish, was poorly represented in 1953/54.

It is considered that in 1954/55 the 1951 year-class will dominate the fishery as four-year-old fish and that the contributions of the 1952 and 1950 year-classes may be less than average for three-and five-year-old fish, respectively. Abundance will, therefore, be about the same or possibly even slightly greater than in 1953/54. Fishing in Area 7 should be better than in Area 6. The fish will be of slightly larger average size.

It is unlikely that catches in Area 9 will be as good as in 1953/54.

Northern Subdistrict (Areas 3-5): The proportion of six-year-old fish in the catch in 1953/54 was larger than normal. Since the indications have been that this year-class (1948) is not of above-average strength, its relatively large contribution in 1953/54 would indicate that the younger year-classes were probably also below average. The 1950 year-class was dominant as five-year olds. There is no reason to suspect that this year-class is of any more than average strength. The indications are that the 1951 year-class is also relatively small.

In the northern subdistrict the quota was just reached in the 1953/54 season, availability was down sharply in comparison with previous seasons, and spawn deposition was reduced somewhat from last year. These considerations and the fact that the year-classes contributing to the stock are all probably of average and below average size indicate that the condition of the northern stock is the poorest for some years. It is probable that while the quota may be taken in 1954/55 it will be taken less readily than in previous years. The average size of the fish in the northern subdistrict will be smaller in 1953/54.

Queen Charlotte Island Subdistrict (Areas 1, 2A-E, 2B-E): The stock in Area 2B-E appears to be at a high level of abundance. Spawn deposition showed a remarkable increase. The 1951 year-class as three-year-old fish made a strong entrance into the fishing stocks and should sustain the population in 1954/55. Therefore, it appears that the prospects are good for an intensive fishery in this area in 1954/55.

An intense fishery developed Area 2A-E for the first time in 1953/54; 26,000 tons were taken from the relatively restricted area of Skidegate Inlet. Spawn deposition was somewhat reduced over the previous year, but not below the level shown from 1948 to 1952. The 1949 year-class as five-year-old fish made the major contribution to the fishable stocks, but the 1951 year-class as three-year-olds

were well recruited and should sustain the fishery in 1954/55. Therefore, it is expected that a good fishery should develop in Area 2A-E in 1954/55. The average size of the fish will probably be smaller than in 1953/54.

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PETRALE SOLE TAGGING PROJECT: United States trawlers, operating during the winter months off the west coast of Vancouver Island, have located what appears to one of the major spawning grounds of the petrale sole or brill. This ground lies between depths of 170 and 200 fathoms, about 30 miles SSW. of Estevan Point, reports the August Trade News, a Canadian Government publication.

Petrale sole, which were tagged in Hecate Strait and Queen Charlotte Sound last summer by biologists aboard the Fisheries Research Board of Canada vessel Investigator No. 1, were caught this past winter in the Estevan spawning area by United States trawlermen.

At the invitation of the Washington State Fisheries Department, the Canadian Pacific Biological Station participated during the early part of April in a cooperative tagging project on the Estevan grounds. A staff member of the Biological Station spent a week aboard the chartered United States trawler Heather, along with a United States biologist.

The expedition encountered heavy weather and adverse conditions but managed to fulfill its objective. Operating 30 miles offshore, the team succeeded in tagging some 1,800 sole in an effort to trace the movements of these fish away from the spawning area.

Recoveries of tags by the Canadian and United States fleets this summer and in years to come should throw more light on the relation of the winter spawning stock off Estevan Point to the stocks which occur later in the year on north coast banks and also on the shallower grounds off the west coast of Vancouver Island.

Colombia

STATUS OF THE FISHERIES: Although Columbia has a considerable marine coast line and many rivers, the domestic consumption of fish is extremely small. Estimates of the total annual consumption of salt- and fresh-water fish range from 13 to 22 million pounds, or an approximate average per-capita consumption of 1.5 pounds a year. This small consumption is largely due to limited transportation facilities, geographic barriers, and limited supplies because of primitive fishing methods. As a result, there is no acquired taste for fish in the interior of the country and the consumption of fresh or canned fish appears to be rising rather slowly, with fish processors and importers attempting to educate the public to increase the demand.

No estimate has ever been made regarding the fishing possibilities in Colombian waters but they are believed to be quite considerable. It is believed that a study of marine fishing potentialities off coasts of Columbia would be of considerable value as it should provide one of the cheapest and most effective means of increasing the country's food supply. The principal fishing regions along the northern coast of Colombia at present include the area around the islands of San Andres and Providencia (Colombian islands 400 miles northwest of the mainland off the coast of Nicaragua), the islands of San Bernardo and Rosario near Cartagena, the Cienaga Grande located between Barranquilla and Santa Marta (in effect a large ocean swamp with a depth of three to ten feet), and a number of coves lying off the coast between

Santa Marta and Cabo de la Vela in the Guajira Peninsula. As far as is known, no large-scale fishing with modern equipment has ever been attempted in Colombian waters along the Atlantic coast.

Commercial fishing activities at present are limited. They are so limited in fact that there now exists only two important commercial outlets in the entire country who purchase sizable quantities of fish for processing and eventual retail on the Colombian market. Both firms are located in Barranquilla. A number of other firms have been organized in coastal cities only to be dissolved after a short period of operation as the fishing business has proved to be difficult and not immediately lucrative. Only recently a fish canning plant established at Santa Marta in July 1952 was closed down. It is understood to have been reorganized and is again operating on a very small scale. However, local trade sources state that as far as they know the Santa Marta canning plant has only been purchasing small quantities of shrimp and oysters and they do not consider it to be very active. Also recently dissolved in the past few months has been a government-sponsored firm. This firm originally was established in 1945 with a paid in capital of one million pesos (US$549,000) for the purpose of encouraging offshore fishing, the preparation of dried fish, and establishing freezer facilities in the country to help augment the domestic consumption of frozen fish. Since its dissolution, apparently due to continuing financial losses in its operations, its functions have been absorbed by the Government's Instituto Nacional de Abastecimientos (INA) which is responsible for building storage facilities for foodstuffs and importing certain staples in short supply. The announced policy of the INA is to develop the fishing industry in the waters of San Andres and Providencia by sending refrigerated vessels to collect fish from the island fishermen and market the fish on the mainland. To date no steps have been undertaken to implement this program.

In Colombia fish are transported to Barranquilla for marketing by canoe down the Magdalena River.

Production: Of the two fish-processing plants in Barranquilla, one is in the frozen fish business and the other cans fish and other products.

The frozen fish firm was established in 1944 and has cautiously but effectively been built up so that it covers all of Colombia. The firm operates fish-collection stations at Santa Marta, Cienaga, and Cabo de la Vela where it buys from numerous individual fishermen. All of the stations have ice manufacturing facilities. The first two are capable of storing 5-6 metric tons each of fish on ice and the latter up to 20 tons, necessary because of the slower turnover due to the greater distance from Barranquilla. The firm also operates one 63-ton fishing trawler with a capacity of 25 tons of fish but which never brings in more than 16 tons after a week to ten days of operation. This vessel uses trawl nets exclusively and its average daily catch is 1.5 tons.

The fish that are collected at the three stations and from the fishing trawler are brought to the main plant in Barranquilla where they are cleaned, weighed, cut into fillets if required, and packed in cardboard containers generally containing one pound of fish. They are then quick frozen and later transported to the main depot downtown which is capable of storing 60 tons of frozen fish. This depot sends fish by air to similar depots in Bogota and Medellia and to a distributor in Cali who operates freezing facilities. The Bogota depot can store up to 60 tons of frozen fish and the

Cali and Medellin depots from 30 to 40 tons. From these centers of distribution, frozen fish are dispatched to more than 150 stores in the entire country which daily or weekly will place their orders. To encourage this trade, the firm has imported deep freezers which it sells at cost and on credit to retail outlets in order to market its frozen fish products. The principal varieties of fish products that are marketed in their order of importance and demand are: roballo (haddock), pargo (red snapper), mojara (like perch), shrimp, oysters, lobster, corbina, and sierra. Although frozen fish is expensive and made doubly so with the costs of air transportation to the interior, the firm estimates that its annual volume of sales of frozen fish products now totals a little more than one million pounds.

The fish cannery was established in 1950 and originally canned vegetables, fruits, and fruit juices but later turned its attention to fish products as the market was especially encouraging when canned fish was placed on the prohibited list of Colombian imports. The firm expanded and built a new plant in 1952 located on the outskirts of Barranquilla at Siape which is on the bank of the Magdalena River. The cannery has a small fish pier sufficient to permit the discharge of cargo from fishing boats directly to its cold-storage room. It buys fish from three suppliers in Cartagena, Santa Marta, and Cienaga who collect from 100 to 150 fishermen each. During the fishing season which begins in October and lasts until April, from 3 to 4 tons of fish a day are collected in this fashion. The firm has also built a small purse seiner which it has used experimentally in training personnel. It does not, however, depend on the purse seiner for its supply of fish.

The cannery itself consists of a cold-storage room with a capacity of 25 tons, cleaning facilities capable of handling up to 5 tons of fish per 8-hour shift, 3 steam precookers, 2 automatic closing machines, and 3 sterilizing retorts. There is also an inspection, labeling, and storage room where the cans are taken after they have been sterilized and cooled in the retorts. Prior to precooking, all fish are cleaned, weighed, and packed by hand into cans. The fish waste is sold for fertilizer and animal feed. The cannery is planning to produce fish meal from its waste.

Market in Barranquilla, Colombia.

During the fishing season over one-half of the cannery production is mullet which is canned in tomato paste in 5-ounce cylindrical or 15-ounce oval cans (sardine style). Mullet is the most popular canned fish on the Colombian market. The remaining production consists of sardines (herring type), shrimp (dry pack), bonito (oil pack-tuna style), mackerel, and oysters. Occasionally it receives albacore tuna from its suppliers but not in sufficient quantity to pack commercially. The finished product is marketed through exclusive wholesale distributors in the major cities of Colombia. The cannery also expects to enter the frozen fish business because of the variety of fish it receives from its suppliers and on the occasions when its purse seiner is operating. Many fish are not satisfactory for canning but sell well if frozen.

Efforts to Increase the Supply of Fish: Only a few tons a day are gathered by collection stations from hundreds of fishermen along the Atlantic coast. Although the production facilities of both Barranquilla fish processing firms are quite small, the facilities are never fully used. The frozen fish firm could easily process 12 metric tons a day and the cannery could do the same but it is rare when one-third this amount is landed. A steadily increasing supply of fish would permit costs to be cut down

sharply and allow lower retail prices to create a larger demand. Both firms have been interested in different programs to increase their fish supply but have not yet been very successful.

In 1949 the frozen fish firm started a program to train fishermen in the use of more modern fishing equipment (boats, motors, and nets) which it rented or sold on credit. It attempted to instruct them in the use of small trawl nets as they considered a purse seine would not be feasible because it is expensive, difficult to handle, and could be lost or damaged in the hands of untrained fishermen. Besides, they were of the opinion that a purse seine would not be economical as the fish supply is not as abundant in warm tropical waters as it is in colder waters. After two years the firm was forced to abandon its program. It discovered that the fishermen were indifferent about caring for fishing equipment and it was often damaged or lost.

The cannery has attempted in the past year and one half to obtain the services of a purse seiner in the United States hoping to arrive at some arrangement to divide the catch. What would not be consumed locally would be sold in the United States. It was successful in having a major fish canning firm send a tuna bait boat to explore the fishing possibilities of the northern coast of Colombia in May 1953. The exploration, however, proved inconclusive due to the unseasonal heavy trade winds blowing at the time which made the ocean very rough. The firm has never been able to discover any person interested in the venture and it has since built its own small purse seiner for experimental purposes. The best success it has had so far has been a catch of three tons of fish in one purse. This has happened only once but the owners are of the opinion that with proper training and supervision, fishing by this method could prove to be economically feasible. They hope to continue experimenting and encourage, by example and instruction, a group of native fishermen to take up this method of fishing.

The cannery now gets most of its fish, particularly mullet, from the Cienaga Grande. Most of the fishing is done there with cast nets from December to April when the fish are most plentiful. The fish spawn in the ocean but come to feed and grow in the Cienaga which is protected from the strong ocean currents and waves whipped up by the trade winds that blow during this time. A purse seiner used from May to December along the northern coast when the trade winds are not blowing would permit a year-round supply of fish.

Any program to train local fishermen to use more modern methods will prove costly and is probably beyond the capital resources of either firm. Besides, the heavy customs duties on fishing equipment makes experimenting even more risky. As an example, the frozen fish firm recently had to pay almost US$1,300 in duties for trawl nets costing about US$1,500. As a purse seine is much more expensive, its loss or damage due to improper handling explains the difficulties and the reluctance to experiment on a large scale with modern fishing methods.

At present, two small United States-owned vessels are collecting fish off the island of San Andres and packing them in ice for sale on the mainland. The vessels carry only 9-12 metric tons of fish and they are unable to purchase ice on the island but must bring it from Cartagena. Marketing the fish has also proved difficult as the buyers and prices were not arranged for in advance causing spoilage while the fish were waiting for the highest bidder. This venture is not expected to continue although with the proper equipment and organization it could be profitable.

Marketing and Imports: The domestic price of fish products is very high due to small local production and customs protection. On March 20, 1951, all canned fish were placed on the prohibited list of Colombian imports. Prior to this fresh fish was also on the prohibited list as it was made impossible for a person to obtain a license to unload fresh fish on the domestic market. Canned fish was again

permitted entry under the terms of Decree 1830 of August 1, 1952, subject to the purchase of export certificates earned and sold at a premium by exporters of certain Colombian agricultural products. In addition to the premium which averages about 40 percent of the dollar value of the import, the duty on canned fish is 80 centavos a kilo (14½ U.S. cents per pound) and 25 percent ad valorem, and the duty on fresh fish is 30 centavos a kilo (5½ U.S. cents per pound) and 25 percent ad valorem. This means that a case of 48 15-ounce cans of mullet, sardine style, imported from Europe at a cost of US$8.00 pays US$10.80 in duties and export certificate premiums.

In spite of the heavy duties, canneries suffered when canned fish was removed from the prohibited list. It did not affect the frozen fish business. During 1953 when the Colombian market was flooded with European and Japanese canned fish imports, the Colombian cannery did very little canning. It later lowered its prices 25 percent to meet the competition and has slowly regained its domestic market. Nevertheless, costs are high because the supply of fish is small and irregular. The factory prices of canned fish to wholesalers in August 1954 as compared with August 1952 are as follows:

Species	August 1954 Price Per Case		August 1952 Price Per Case		Case and Can Size
	Pesos	US$	Pesos	US$	
Mullet or sardines	48.00	19.12	60.00	23.90	48 cans, 15-oz. oval
Mullet or sardines	40.00	15.94	50.00	19.92	100 cans, 5-oz. cylindrical
Bonito	50.00	19.92	76.00	30.28	48 cans, 7-oz. cylindrical
Shrimp	72.00	28.69	84.00	33.47	48 cans, 5-oz. cylindrical
Oysters	85.00	33.86	-	-	48 cans, 5-oz. cylindrical

The wholesale price of certain frozen sea-food items sold by the frozen fish firm to distributors in the interior average about Ps.1.60 (63 U.S. cents) a pound for roballo fillets, Ps.2.25 (90 U.S. cents) a pound for pargo fillets, and Ps.3.00 (US$1.20) for an 8-ounce box of shrimp or lobster.

Import figures are not complete but show a sudden spurt in 1952 when canned fish was removed from the prohibited list. The import figures for canned fish in 1953 are estimated to have reached at least 4.4 million pounds.

Columbian Imports of Canned Sea Food (Packed in Oil, Tomato Sauce), or Dry Fish, 1946-1952

Year	Quantity	Value (c.i.f.)	
	Metric Tons	1,000 Pesos	1,000 US$
1952	273	448	178
1951	2	4	2
1950	1/	1/	1/
1949	146	155	62
1948	1,116	1,189	474
1947	2,022	2,718	1,083
1946	634	934	372

1/Not available.

Outlook: The principal problem for the Colombian fishing industry continues to be the primitive fishing conditions. Efforts to overcome them have so far been left in the hands of small private organizations. Recently a decree (No. 1785, June 8, 1954) was issued for the control of fresh-water fishing which prohibited certain types of fishing, such as the use of explosives; and provided for the promotion of the fresh-water fishing industry by authorizing scholarships for the study of fisheries; the employment of foreign technicians; establishing fishing schools; and the duty-free importation of certain items used by the fishing industry. So far, no measures have been taken to put into effect such a program. If a similar decree were authorized for salt-water fishing, it could give added impetus to private efforts now being undertaken.

In spite of the difficulties encountered by the Barranquilla fish industry in trying to augment its supply of fish, it is encouraging to note that the supply has been growing slowly. There are now more fishermen working in the Cienaga Grande. Outboard motors for the fishing launches are beginning to replace poles as a means of propulsion and larger cast nets are being used. The fish-processing firms who were receiving a daily catch of 2-3 metric tons during the 1953 fishing season have received from 3-4 tons a day in 1954.

With the removal of canned fish from the prohibited list, the past 18 months has been a period of readjustment and trial for the fish-canning industry. However, the present heavy customs protection is expected to continue. This protection coupled with a slowly increasing supply of sea food from local sources should provide a more encouraging picture to Colombia's small fishing industry in the coming year.

Cuba

MEMBERSHIP IN NEW ASSOCIATION REQUIRED OF ALL VESSELS FISHING CUBAN WATERS: All fishing vessel owners or operators fishing in Cuban waters, regardless of nationality, must be registered with the newly-created Naticnal Association of Fishing Vessel Operators (Asociacion Nacional de Armadores de la Pesca). This law was promulgated by Decree No. 1670, published in the Oficial Gazette No. 207 of September 6, 1954, and includes vessels in the categories of the Third List of the Registry of Vessels under the supervision of Port Captains. Such registration is compulsory under threat of fine. Lighters, small fishing boats of not more than 16 feet over-all in length, and presumably pleasure craft, are exempted from registration.

The Decree also establishes a compulsory fee or tax of between 10 and 40 U. S. cents per net ton or fraction thereof for each vessel owned by any one member of the Association. The revenues received to be distributed as follows: 15 percent to meet management expenses of the Association; 20 percent for the Cuban National Fisheries Institute; and the remaining 65 percent for the improvement of the fishing fleet and the purchase of new fishing units and equipment.

No owner of fishing craft or vessel subject to registration will be permitted to sail or operate unless he joins the Association and is paid up on the monthly tonnage dues. He will be subject to a fine of from 10 to 25 pesos (US$10-25) which is doubled or tripled if the offense is repeated.

A period of 60 working days is granted for the registration of all vessels falling under the categories established in the Third List of the Registry of Vessels with Cuban flag.

Denmark

SELECTED CANNED FISH EXPORTS, JANUARY-JUNE 1954: Canned sprat sardines and canned mackerel have comprised the bulk of the Danish canned fish exports in the past few years, according to a September 1 U. S. Embassy dispatch from Copenhagen. Sprat sardines have accounted for about 60-65 percent and mackerel about 20-25 percent of the total Danish canned fish exports. In 1952 and 1953 the United States market took 396 and 383 metric tons, respectively, of sprat sardines from Denmark (see table). This was 15 and 20 percent of Denmark's total exports of canned fish and 90 to 95 percent of the total exports of canned fish to the United States. Export of sprat sardines to the United States in 1954 is not expected to differ much from preceding years.

Canned mackerel exports to the United States increased greatly in the first half of 1954 as compared with 1953; however, even then, in the latter period the

Danish Exports of Selected Canned Fishery Products, January-June 1954 with Comparisons (Total Exports and Exports to United States)

Item	Jan.-July 1954			Total 1953			Total 1952		
	Metric Tons	1,000 Kroner	1,000 US$	Metric Tons	1,000 Kroner	1,000 US$	Metric Tons	1,000 Kroner	1,000 US$
Sprat Sardines:									
Total exports	1,140	3,692	534	1,895	8,669	1,253	2,571	14,305	2,067
Exports to U.S.	235	1,069	154	383	2,297	332	396	2,668	386
Mackerel:									
Total exports	197	491	71	612	1,752	253	986	4,295	621
Exports to U.S.	60	119	17	3	19	3	1	5	1
Anchovies and Small Herring:									
Total exports	8	48	7	29	133	19	49	239	35
Exports to U.S.	-	-	-	-	-	-	2	12	2

exports totaled only 60 metric tons, valued at 119,000 Danish kroner (US$17,000). Denmark's exports of sardines, anchovies, and small herring to the United States were insignificant.

France

TUNA VESSELS USING SALT-WATER ICE: The use of salt-water ice to preserve the catches of tuna vessels and trawlers operating out of ports on the Isle d'Yeu in France has been reported. A French firm built a plant for the manufacture of ice from sea water adjacent to this port in the fall of 1953. As a result of the severe weather conditions prevailing on the nearby fishing grounds at that time, a thorough test of the efficacy of salt-water ice was possible.

One tuna sailing vessel, carrying 13 metric tons of this type of ice, caught substantial quantities of tuna the last few days of August 1953. Tornadoes sweeping the area prevented the vessel from docking at a port. Although the fish had been in ice for 27 days when landed, the cannery manager judged the entire load acceptable for processing. The eyes of the fish were bright and the meat firm.

Other reports of tuna catches stored aboard vessels 14 days in sea-water ice showed that the temperature in the muscle area of the tail section on landing was 32°F. for fish weighing approximately 12 pounds each. A vessel using regular ice on an 18-day trip had tuna aboard that showed a temperature of approximately 46°F. for the same size fish.

A trawler, carrying both regular and sea-water ice, had small gurnards aboard after 5 days in regular ice at meat temperatures of approximately 39°F. This species, stored in salt-water ice, had meat temperatures of 37°F. after the same storage period.

Hake stored at sea in salt-water ice for two days and thereafter ashore in this ice in boxes at 32°F. storage for 5 days were adjudged excellent in appearance. The temperature of the meat then was 33°F

Some of the characteristics of the salt-water ice claimed as beneficial for fish preservation are: (1) ice melts at approximately 24°F.; (2) melt water has salinity

of 10-12 percent; (3) preservation of fresh-fish flavor that only sea-water ice can retain.

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TAXES ON IMPORTED FISHERY PRODUCTS REDUCED: Certain agricultural and fishery products have been exempted from the French "transaction" tax and France has provided fixed-rate deductions from the "value added" tax levied on various preserved foods by a decree of June 28, effective July 1, 1954.

The French transaction and value-added taxes are sales taxes levied on domestic sales and imports, the U. S. Department of Commerce reported on September 27.

Fishery products exempted from the transaction tax and their French import tariff numbers are the following:

Ex.24. Fillets of sea fish, fresh or preserved, in fresh condition.
Ex.25. A.to E., Fish simply salted, dried, or smoked.

Deductions from the value-added tax applicable to certain preserved foods are allowed to avoid double taxation on agricultural or fishery products incorporated in the preserved products. The fishery products to which these deductions apply and rates of rebate are:

Ex. 164. Fish, prepared or preserved, put up in tins, glasses, jars, or hermetically sealed containers, except salmonidae and tuna: 15 percent.

Ex. 164. Prepared or preserved tuna, put up in tins, glasses, jars, or hermetically sealed containers: 25 percent.

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FISHING AND MARITIME INDUSTRIES CONGRESS: The Fifteenth National Fishing and Maritime Industries Congress was held in Algiers, Algeria, June 22-26, 1954. The Congress was the regular biennial congress of the French fishing and maritime industry, at which problems concerning the industry were discussed--principally the lack of credit available to small operators and processors, a September 15 U. S. Consular dispatch from Algiers reports.

The Congress had also invited foreign representatives with the purpose of forming an international organization to promote consumption of marine products. Delegates from Portugal, Italy, Greece, Yugoslavia, Denmark, Morocco, and FAO attended.

At the last meeting of the Congress it was decided to form an international association to promote the consumption of marine products, "Association Internationale de Propagande pour la Consommation des Produits de la Mer." It was stated that Belgium, Great Britain, and the United States have given their accord by letter. (It is not known what American organization sent the letter.) The next meeting of the new association will be held in Lisbon in 1955. The next biennial National Fishing and Maritime Industries Congress will be held in 1956 in Brittany, at a city not yet decided upon.

German Federal Republic

GOVERNMENT TO SUBSIDIZE NEW FISHING VESSELS: The West German Government has announced its intention of assisting, through direct subsidy, in the construction of new luggers--special small vessels designed for herring fishing. This program will not only help to modernize the overaged lugger fleet but it will give some relief to the hard-pressed smaller West German shipyards, a U. S. consular report (August 18) from Bremen points out.

The West German Federal Government will make available DM 4 million (US$1 million) to aid in the modernization of the overaged West German lugger fleet. The funds will be appropriated from returns derived from ERP counterpart investments in Western Germany. This appropriation will cover 30 percent of the total cost of construction estimated at about DM 12 million (US$2.9 million), which will build 12 luggers. The fishing companies participating in this program of rationalization will be required to finance at least 20 percent of the construction cost from their own resources. The remainder will probably be covered by tax-favored credits to be extended under a still-existing paragraph of the West German income tax law. It is expected that this vessel construction program will alleviate somewhat the critical position of the West German medium and small shipyards which are being faced with the necessity of reducing their labor forces due to a lack of new orders. The keels were scheduled to be laid in September of this year, and the vessels are expected to be delivered shortly before the start of the next herring season in June 1955.

The 12 new vessels--of which 5 will go to Vegeaack, 2 each to Leer and Emden, and 1 to Glueckstadt--are part of a long-range program developed by the lugger fishing trade to build 30 new vessels within the next 5 years. The Federal Government seems to be willing to continue its aid beyond the DM 4 million (US$1 million) already committed, presumably on the 30 percent basis. However, since tax-favored investments will most probably no longer be permitted in 1955, the financing of the rest of the long-range plan appears to be difficult. Trade representatives are reported to have indicated that interest subvention might be one of the means to enable the lugger fisheries to obtain the required funds in the capital market.

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PROCESSED FISHERY PRODUCTS, JANUARY-JUNE 1954 AND YEAR 1953: There were some slight increases in the West German production of processed fishery products during the first six months of 1954, according to a September 24 U. S. consular dispatch from Bonn (see table). Fish meal and fish oil showed the largest increases over the first half of 1953 and there were slighter increases in the production of canned and marinated fish. Shellfish and smoked and salted fish were all produced in smaller volume during the January-June period of 1954 as compared with the similar period a year earlier.

West German Production of Processed Fishery Products, January-June 1954, with Comparisons

Item	1954	1953		
	Jan.-June	Jan.-June	July-Dec.	Total
	(Metric Tons)			
Smoked fish	13,697	16,414	18,301	34,715
Salted fish	1,991	3,133	27,578	30,711
Marinated fish	21,137	18,243	35,626	53,869
Canned fish	15,120	14,183	27,662	41,845
Shellfish (processed only)	218	249	341	590
Miscellaneous fish products	2,383	2,263	3,001	5,264
Fish oil	5,449	4,781	15,007	19,788
Fish meal	34,605	30,391	44,833	75,224

CATCH REGULATION PLAN UPSET BY LIGHT LANDINGS: The West German Food Ministry announced in mid-August that it had asked the Association of West German Fishing Companies to do everything possible to help improve the supplies of fresh fish for the German market. Recent bad weather conditions, substantially reducing fish catches by West German vessels, have upset the Government-approved plan to regulate fish landings, local newspapers reported, following a statement issued to that effect by the Federal Food Ministry.

The plan had provided for the use of 40 percent of the trawler fleet for the catching of white fish in August, 50 percent in September and October, and 70 percent in November--the balance to be used in herring catching. The plan was to avoid an oversupply of herring--the catching of which is more lucrative due to shorter trips and relatively bigger catches--and a resultant disruption of marketing conditions on the one hand; and to insure an adequate supply of white fish on the other.

The unusual summer storms, however, greatly hampered fishing activities. Comparing the last week in July and the first two weeks of August with the same period of 1953, white fish catches of deep-sea trawlers were about 33 percent lower, while herring landings fell about 23 percent short of last year's level. As a result, prices rose considerably.

The Federal Food Ministry urged the Association of Trawler Fisheries to do everything in its power to improve the white fish supply and to request its members not to land fish in foreign ports. The Association has pointed out, though, that it has adhered to the catching plan, and that any diversion of herring catchers for white fish catching would reduce still further the already inadequate supply of herring. The Food Ministry has also announced its intention of stimulating the importation of fresh fish to fill the present gap. Fish traders, however, are skeptical as to the success of these endeavors, since other countries are having similar difficulties in their fish supply, states an August 18 U. S. consular dispatch from Bremen.

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FISHERY RESEARCH VESSEL LAUNCHED: The West German fisheries research vessel Anton Dohrn was launched in Cuxhaven on August 16. It is the third ocean fishery research vessel in German history. The West German Government has appropriated DM 2.5 million (US$590,000) for construction of the vessel to be operated by the Federal Research Institute for Fisheries in Hamburg. The vessel will presumably be put into service in December 1954.

The Anton Dohrn is equipped with the most modern nautical navigation aids including echo-sounding equipment and radar. The over-all length is 204 feet, length between perpendiculars 177 feet, width 34 feet, draft 15 feet, and measures 800 GRT. It is steam propelled with 850 hp. and develops a speed of about 12 knots per hour. The vessel is equipped with a special rudder with a 100 hp. electric motor to give added towing power and improved maneuverability.

Special model tests were made to achieve a high stability to insure continued research even under bad weather conditions. The vessel has a double deck. The top deck carries the usual fishing gear, and research equipment is located on the lower deck. The vessel has laboratories for biological, oceanographic, chemical, and bacteriological research.

The ship's fish hold has a capacity of about 100 metric tons. A deep-freeze plant, a fish-meal plant, and fish-oil extracting equipment have also been installed. Research to be conducted will cover every imaginable phase of the fishing industry, including exploration of fishing grounds; developing and testing of new fishing gear, especially nets and net material; and all forms of processing and preserving fish.

The Anton Dohrn will carry a crew of 25, and has accommodations for 20 scientists. The vessel has also been equipped with a small hospital, since it is expected to assist two other government-operated ships in rendering medical, technical, and other types of aid to fishing vessels on the high seas, a U. S. consular dispatch (August 18) from Bremen points out.

Iceland

TRAWLERS GET AID FROM AUTO IMPORT TAX: Icelandic trawlers have been having difficulties in obtaining crews as they have been unable to pay wages competitive with land jobs, according to the September 3 International Financial News Survey. A tax (equal to 100 percent of the f. o. b. value) on automobile imports from Western Europe and the United States has been levied by the Icelandic Government to assist the vessels. The proceeds from the tax is estimated at 12-15 million kroner (US$740,000-920,000) for 1954.

India

NEW TYPE DEEP-SEA FISHING VESSEL LAUNCHED IN MADRAS: A prototype 24-foot deep-sea fishing vessel (Pablo), built by the Fisheries Department of the Madras Government under the supervision of an FAO-sponsored Norwegian naval architect, was launched at Madras harbor on September 10. This vessel is round-bottomed with a vertical keel. It is 24.6 feet long and 6 feet 10 inches wide, with a total displacement of 2.6 tons. It is fitted with a semi-Diesel engine of 10 hp. capable of a speed of 8.5 knots. The cost of building the boat was Rs. 5,000 (US$1,048). The engine was imported from Norway.

The Madras Deputy Director of Fisheries in his welcome speech on the occasion stated that the seas round Madras State were very rich in fish. He pointed out that one grave handicap to the development of the fishing industry of Madras was the economically backward state of most of the fishermen, many of whom were heavily indebted to middlemen. He stated that under the Indo-American Technical Cooperation program, the Government of Madras would soon receive about 30 marine Diesel engines, a few of which had already arrived for fitting in fishing boats. In addition to the vessel, the Norwegian architect has built a surf landing craft to replace the conventional catamaran (a type of raft composed of 3 or 4 logs lashed together). In addition to getting modern fishing vessels under the Technical Cooperation program, Madras is to receive a large quantity of fishing gear (hooks, lines, nets, nylon, etc.) from the United States. He said that Madras State expected from Canada under the Colombo Plan up-to-date fishing vessels and large quantities of implements.

The architect said that the vessel Pablo was only a step in the direction of increasing fish production in the country. He observed that interesting features, such as the round bottom of the traditional Indian boats, had been incorporated in the design. He noted that the most interesting feature was the net chute by which the net could be laid out by the engine in motion. To insure safe operations, he said, the rudder and propeller had been protected by an overhanging stern. He added that the mechanical devices had been designed as to save much of the labor involved in deep-sea fishing and at the same time to increase the fishing capacity of the boat.

The Madras Minister of Agriculture said that the launching of the boat was a landmark in the activities of the Fisheries Department of the Government of Madras.

He spoke of the great risks and hazards to which Madras fishermen were exposed while deep-sea fishing in catamarans and urged the use of power boats. He stated that the Madras Government was interested in developing the marine fishing industry and helping fishermen. Referring to England, Japan, and other countries where fishermen were organized into cooperative societies, he suggested the formation of such societies to use modern equipment and thereby increase the income of fishermen.

Japan

NORTH PACIFIC SALMON CATCH, 1954: The 1954 catch of the Japanese North Pacific mothership salmon fleets totaled 20,493,645 fish, over 2½ times the 1953 catch of 7,700,176 fish, according to the Japanese Fishery Agency's figures printed in the Japanese press (Nippon Suisan Shimbun, September 6). In terms of catch per fishing vessel, last year's figure was 73,335 fish, compared with 99,969 fish for this year. Last year there were 3 fleets with 93 independently operating fishing vessels and 12 scouting boats, a total of 105 boats; whereas this year's 7 mothership fleets had a total of 205 fishing vessels (160 catchers and 45 research boats). The fleets commenced operations between May 15 and May 20 and left the fishing grounds between August 11 and 23.

Compared with last year, weather and sea conditions this season were good and the catch was also better. The catch by species--in number of fish--was as follows (figures in parentheses for 1953): red or sockeye, 3,816,874 (1,579,850); chum, 9,403,035 (2,707,134); pink, 5,801,615 (3,065,336); silver and other, 1,472,121 (347,856). Of the 1954 catch, the amount of fish set aside for canning by the motherships yielded 270,375 cases of canned salmon. It is reported also that 25 million pounds of salmon were salted and 26 million pounds frozen.

Note: This supersedes the preliminary data published in Commercial Fisheries Review, October 1954, pp. 63-64.

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RESEARCH VESSEL STUDIES NORTH PACIFIC SALMON FISHERY: The Tokai Regional Fishery Research Laboratory's vessel Tenyo Maru (218 tons) returned to Tokyo on September 1 from a northern oceanographic cruise of about 110 days' duration, the purpose of which was to study the salmon fishery. The vessel sailed from Tokyo on May 17. During the cruise long lines were set and other experimental operations carried on in the Bering Sea and 500 miles off the Aleutians--good results were obtained. It appears that interesting data were also collected in the oceanographic investigations, according to the Japanese press (Nippon Suisan Shimbun, September 6).

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CERTAIN TRAWLERS PERMITTED TO FISH FOR TUNA: The Japanese Fisheries Agency has adopted a policy to allow tuna fishing by vessels which gave up trawling as a condition of being permitted to engage in the salmon fishery. When the salmon season ended, these vessels were looking for an off-season fishery. There are said to be about 80 vessels seeking to take up tuna fishing on a part-time basis, the Japanese press (Nippon Suisan Shimbun, September 6) reports.

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COD AND FLATFISH OPERATIONS IN BERING SEA: Cod and flatfish taken by the Japanese trawler Asama Maru in northern Pacific waters (principally the Bering Sea) brought unexpected high prices in Japan of 120 to 170 yen per kan (about 4 to 7 U.S.

cents per pound). The company operating this 993-ton trawler received permission from the Japanese Fisheries Agency to conduct experimental trawling for sole and cod in those waters. The vessel left Hakodate June 22 and returned August 8. The same trawler sailed again on August 14 and was scheduled to leave the fishing grounds south of Nunivak Island about September 12.

As a result of the success of the Asama Maru, the same company launched another North Pacific trawling operation using a vessel which had served as a mothership in this year's salmon fishery.

This company as well as other companies have since sent out several other fleets to fish in the Bering Sea waters for cod and flatfish. Most of the fleets were expected to leave the fishing grounds by the end of October.

The Japanese Fisheries Agency has set the limit of each expedition at 4,500 metric tons, expected to consist chiefly of sole. Part of the fish caught by these expeditions will be salted and the remainder frozen. Taking of halibut, crab, and salmon is prohibited.

Norway

NORWEGIAN SARDINES-U. S. MACARONI TIE-IN ADVERTISING: The Norwegian Canners Association has joined United States macaroni manufacturers in a promotional tie-in for Norwegian sardines and American macaroni, reports a September 2 news release from the Norwegian Information Service.

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TUNA CATCH CONTINUES GOOD: Norwegian fisherman had taken 7,900 metric tons of bluefin tuna through August 21, according to the August 26 issue of Fiskets Gang, a Norwegian trade publication. Of the total, 4,400 tons was exported in ice, and the balance in frozen form.

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HERRING FACTORYSHIP ORDER FROM GERMANY: A Norwegian firm has ordered from a German shipyard a vessel intended as a combined herring trawler and factoryship, reports the September 18 Foreign Trade, a Canadian Government publication.

Panama

TERRITORIAL WATERS REGULATIONS DEFINED: Panama's territorial waters extend to a distance three miles offshore, according to the Chief of the Mining and Fisheries Department of the Panamanian Ministry of Agriculture and the Port Captain of Panama City. In addition, Panama claims jurisdiction over waters of the country's continental shelf. These and the following points were answers to questions on commercial shrimp fishing off Panama, a U. S. Embassy dispatch (September 17) from Panama City points out.

However, Panama has not enacted a law defining the extent of its territorial waters and/or legally establishing the Government's position with regard to the continental shelf. Panama would appreciate, however, if captains of fishing vessels

operating off its coast in international waters (outside the territorial and jurisdictional waters) would comply with rules and regulations as set forth by international conventions for conservation of fishery resources, such as, for example, the Whaling Convention.

To operate in Panamanian territorial waters for fish and shrimp, Decree 172 of August 5, 1953, provides that only fishing craft built in Panama may engage in commercial fishing operations within the territorial and jurisdictional waters of the Republic. There are exempted from this regulation foreign-built vessels which fish for bait exclusively in the Pacific waters south of latitude 8°30"N.

Principal ports for Panama are in the Canal Zone. These are the ports of Balboa on the Pacific, and Cristobal on the Atlantic side. The rules and regulations governing navigation of the Panama Canal and adjacent waters (under the jurisdiction of the Canal Zone Government) require that on arrival (at either Cristobal or Balboa) there shall be ready for immediate delivery to the boarding party, for inspection or delivery, as the case may be, such papers, and numbers of copies of each, concerning tonnage of vessel, cargo, persons on board, health conditions, pratique, and such other matters upon which information is necessary, as may be prescribed by the Governor. The required manifests, lists, and statements shall be sworn to by the master or agent of the vessel. Failure to have the prescribed papers upon arrival will subject the vessel to delay, but not to fine.

All documents listed below as being required of a ship should be ready for immediate delivery to the boarding party:

Ship's information sheet (Panama Canal form)
Clearance from last port
Quarantine declaration (International Standard form)
All other certificates of a sanitary nature
Passenger list (Panama Canal form)
Crew list (Panama Canal form)
Store list
Cargo declaration (Panama Canal form)
Manifest of local cargo
Declaration of explosive cargo carried
Declaration of inflammable or combustible liquids in bulk carried as cargo
Statement of fuel account (for vessels in ballast only)
Panama Canal tonnage certificate
National register
General arrangement plan of vessel
Report of structural alterations and of changes in use of tanks or other spaces since last transit

In compliance with Panama's maritime laws, any vessel calling at a Panamanian port must have, duly certified by a Panamanian consular officer, a copy of its manifest or cargo list, bill of health, crew list, and passenger list. These documents are in addition to the "Touch and Trade" papers and whatever other documents required by the country of vessel registration.

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FISHERIES TRENDS, 1953: Bait Fishing: Activity in the Panama fisheries during 1953 indicated that the Government was attempting to regulate the industry to benefit the general economy of the nation, an April 15 U. S. Embassy dispatch from Panama points out. As an earlier decree had been ineffective, the Government early in the year modified its bait fishing decree of December 1952 to require bait fishing boats in Panamanian waters to purchase only supplies and have small repairs done

in the Republic instead of in the Canal Zone. The earlier decree had required that all supplies, lubricants, and fuels be obtained and repairs made in the Republic and none in the Canal Zone. As of June 12 a new bait fishing decree (No. 148) was promulgated by which was provided a three-months closed bait fishing season from November 1 to February 1 of each year; and also established a new tariff for licenses of US$11 for each net ton of a vessel's weight instead of the US$15 formerly collected, the validity of which would be for one year from the date purchased.

Shrimp: Decree No. 172 of August 5, regulates commercial fishing in Panamanian waters and in effect restricts such fishing to Panamanians and Americans. At the same time press reports appeared indicating that most of the country's shrimp fishing companies would be combined into one large firm. Within a few months' time, shrimp fishing outfits with an estimated capitalization of US$2 million had been merged with control resting with prominent Panamanians, although at least one well-known American was associated in an executive capacity with the new firm. In addition, considerable United States capital was reported to be invested in the new combine.

The growing importance of the shrimp industry is revealed in the exports principally to the United States. The following table shows the growth of the industry since 1950.

Panamanian Shrimp Exports, 1950-53

Year	Pounds	Value
		US$
1953	4,583,636	1,915,585
1952	2,399,867	1,350,189
1951	1,238,520	704,680
1950	304,284	167,579

The shrimp export business increased in volume over 1,400 percent in 1953 as compared to 1950, and increased over 1,000 percent in value during the same period. The merger of the shrimp fishing interests should accelerate the upward trend, as the economies to be expected in operations plus the more favorable marketing facilities accruing to a large-scale business organization, can conceivably be used to better advantage in supplying the American market with a greater portion of its requirements.

Other Fishing: Official statistics indicating other fishing activities in the Gulf of Panama, where practically all commercial fishing is done, reveal that total fish (not including shrimp) production during 1953 amounted to approximately 2,146,400 pounds, or a decrease as compared with 2,686,269 pounds during the previous year, 1,892,075 pounds in 1951, and 1,529,886 pounds in 1950. Despite the decrease in 1953, the general trend of the fishing industry appears to be upward, particularly as regards shellfish.

Territorial Waters: Toward the end of the year the Government reported to the National Assembly that the lack of suitable regulations was resulting in illegal fishing in Panamanian waters by foreign vessels, and asked that appropriate legislation be enacted. A few weeks later a comprehensive fishing law was introduced into the Legislature, a law which seeks to codify and modernize all Panamanian legislation dealing with the nation's fisheries and marine wealth; a law which proposes to extend Panama's territorial waters to the edge of the Continental platform; and which claims all marine wealth within this area for the nation. As drafted, this law tends to monopolize fishing resources for Panamanians and to increase the Government's income as the result of the exploitation of such resources. (At the end of the calendar year, the Legislature had not taken any action on this law. At the closing of the Legislature's session in February 1954, no action had been taken, but a special powers bill passed at the conclusion of the session delegated authority to the President to take such action by decree as might be necessary to protect the nation's marine wealth.)

Outlook: The steadily rising shrimp industry seems to indicate that the Government's self-sufficiency policy is being effectuated in this field, whether it be considered as a result of such policy or not. The importation of fish into Panama has been, and still is, a source of considerable leakage of funds abroad, as the domestic catch has not been able to satisfy local requirements over the past few years. Beginning in 1952, however, the markets in urban areas began to be able to supply in part local requirements, although prices tended to restrict demand to middle and upper income groups. In any event, fresh, locally-caught fish were readily available most of the time in outlets in and around Panama City during 1953. As a result of the foreign demand for locally-caught shrimp, however, this delicacy has almost priced itself out of the local market, except for upper income groups. Prices of other types of fish on markets a few miles from Panama City, however, were well within the reach of all income groups. If the present trend in the industry continues, it is possible that most fish, other than shrimp, will within the next few years be available on the market at Panama City and at prices which all can afford.

Spanish Morocco

CANNED FISH PRODUCTION, 1953: The canned fish production in Spanish Morocco during 1953 totaled 3,325 metric tons, valued at 66.5 million pesetas (US$1.6 million) to the packers, according to a September 10 dispatch from the U. S. Legation at Tangier. This is an increase of 11 percent in both volume and value as compared with the 1952 production of 3,000 metric tons, valued at 60 million pesetas (US$1.4 million).

WHALE OIL PRODUCTION, 1953: Spanish Moroccan whale oil production in 1953 totaled 80 metric tons, valued at 1 million pesetas (US$24,000) to the producers, compared with the 1952 production of 147 metric tons, valued at 2 million pesetas (US$48,000).

Sweden

DOLLAR IMPORT REGULATIONS LIBERALIZED: Sweden has liberalized its regulations regarding imports (including some fishery products) from dollar countries (among which the United States is included). The Swedish Trade and Industry Commission's announcement 200 of September 24, 1954, contains regulations on the liberalization of dollar imports as well as a list of commodities which will be liberalized effective October 1, 1954. Commodities included in the dollar-free commodity list may be imported without license under proviso that the country of origin of the commodity (i. e. the country where the commodity has been manufactured or produced) be any one of the countries or areas (the dollar area) listed in the Announcement and that the country of purchase of the commodity (i. e. the country where the commodity has been purchased or for sale or other purpose directly or via another country been shipped to Sweden) be either any one of those within the dollar area, or any one of the EPU countries, Finland, Indonesia, or Yugoslavia. Included among the dollar-free list of commodities which can be imported into Sweden from the dollar area without import license are the following:

Statistical Item Number of the Swedish Customs Tariff	Commodity
315-317	IV. Products of the foodstuffs industry, etc. Preserves of fish and shellfish
321:1, ex 321:2	Preserves of soups

Among the countries listed as belonging to the dollar area are the United States, Possessions of the United States in Central America (Puerto Rico, St. Thomas, St. John, Santa Cruz, the Panama Canal Zone, etc.), and Possessions of the United States in Oceania (the Marshalls, Guam, Hawaii, American Samoa, etc.).

The Commission on the same date also issued announcement 201 which contains regulations for the import of dollar goods via third countries or against "transit dollars." However, fishery products are not included in this announcement.

United Kingdom

LARGE-SCALE TEST OF FREEZING FISH AT SEA: An experimental project for freezing the first part of the catch on a trawler is being planned by the British White Fish Authority and the Distant Water Vessel Owners' Development Committee, with the technical assistance of the Torry Research Station. The conversion of an existing type of trawler is being planned. This joint project is explained in a report, Food Investigation 1953, by the Food Investigation Board of the British Department of Scientific and Industrial Research. The report deals with the work carried out during the year by the Food Investigation Organization on the handling and preservation of foodstuffs, and included is the work done at the Torry Research Station on freezing of fish at sea.

The report on the work of the Torry Research Station, signed by Dr. G.R. Reay, the superintendent, says: "Distant water trawlers rarely return to port with a full catch of fish because catching rates are not now high enough to enable them to do so without the risk that some of the catch may be condemned.

"Quick-freezing and storage of frozen fish at low temperatures is the only known method of preserving quality over long periods and of providing the trade with an ample supply of good fish. The problem is to apply this method in a way which is technically and economically sound.

"The full economic advantage of freezing will probably only become apparent when larger ships are built which can remain at sea appreciably longer and travel at more economic speeds. Nevertheless freezing the earlier part of the catch on existing ships must first be investigated."

A freezer which is more suitable than existing types for freezing gutted unfilleted fish has been designed and tested on shore and on the station's vessel Keelby during the past three years. This experimental plant, the Torry vertical plate freezer, is now being developed commercially.

The pilot-scale plant on board the Keelby has been modified and installed in a top-loading insulated cabinet which is more convenient for operation at sea. This plant is undergoing engineering trials on shore and is being used to produce frozen fish for quality tests.

In connection with the full-scale joint project, the Torry Research Station has assisted in preparing a scheme for the conversion of an existing Arctic type of trawler to enable the first part of the catch to be frozen. Various possible layouts for different sizes of plants have been investigated, with the object of evolving a type of installation which occupies a minimum of the valuable stowage space while retaining complete operational convenience and flexibility.

Detailed records of the rates of catch, haul by haul, have been compiled during trips in recent years on distant-water trawlers. These have been analyzed to pro-

vide estimates of the amount of fish which would be frozen by various sizes of plants before the permissible delay between catching and freezing (determined by final quality) is exceeded. This analysis is required because of the delays necessitated by the considerable hourly fluctuations in the catching rate, and the variation of the daily average catch, especially near the beginning of the fishing period.

In this analysis and the planning of layouts, the experience of commercial fishing operations gained in recent years by our engineers has been invaluable. In planning the details of conversion and installation of plant and auxiliaries, assistance has been given by an experienced professional marine engineer employed by the White Fish Authority.

The influence of prefreezing treatment upon the quality of cod frozen at sea continues to be studied. "It appears that the same amount of care is required in gutting and icing the fish before freezing as has been recommended for normal handling on trawlers. Fish which has been iced for three days and then frozen and stored for some months at -28.9°C. (-20°F.) has proved to be of entirely satisfactory quality for 'freshing' and for smoke curing. Work in progress should determine how much longer than three days fish can be held in ice before freezing and still yield a reasonably satisfactory product. As already implied, permissible delay before freezing is an important factor in estimating the size of freezer to be installed on a trawler. Storage at low temperatures is essential to maintain quality in the frozen fish."

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PARTIAL LAY-UP OF TRAWLERS ENDS SEPTEMBER 11: The current 20-percent lay-up of British deep-water fishing trawlers ends on September 11, The Fishing News of August 13 announced.

This practice of partial lay-up in the summer months was first introduced last season as a practical step towards checking uneconomic and wasteful fishing in those months when consumption tended to decline with disastrous effects on prices and returns for fishing effort.

In spite of the reduced supply this effected, there still was almost 42 million pounds of good edible fish which could not find a market and had to go for meal.

This year the lay-up was originally planned to operate from April 19 to July 31 and was enlarged on the basis of last season's experience to 25 percent of deep-water vessels.

On June 25 it was announced that the proportion of lay-up would be reduced to 20 percent but that the period would be extended from August 1 to September 11 because of the market conditions then ruling. It was stated then the expectation was that the market would harden about that time. It was also revealed that figures showed that even during the period of the 25-percent lay-up the market had been reasonably supplied in relation to demand except on very limited occasions. In some periods, in fact, the market could not absorb supplies and quantities had to go for meal.

Fleetwood was included in the lay-up scheme this year for the first time, the other ports being Hull and Grimsby. Altogether 270 ships were affected--162 based at Hull, 90 at Grimsby, and 24 at Fleetwood.

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DEVELOPMENTS IN FISHERIES DISCUSSED IN THIRD REPORT OF WHITE FISH AUTHORITY: A welcome reversal of the downward trend in numbers of British near- and middle-water trawlers, as a result of the plans to promote the re-

building of the fishing fleet, is stressed in the third annual report of the White Fish Authority for the year ended March 31, 1954.

Results of an investigation into the costs and earnings of certain coastal wholesalers for 1952 showed that their net profits were less than in 1951.

These are the principal matters featured in the report.

Catch: The report says that while the weight of fish landed in 1953/54 (to March 31) was down by 7.2 percent compared with the previous year, the value decreased by no less than 10.4 percent.

The weight of fish landed by British vessels in 1953/54 was down by 4.3 percent, and the value by 5.4 percent, compared with the previous year. The weight of foreign-caught fish, however, decreased by 31.1 percent, and its value by 33.9 percent.

Distant-Water Fleet Bigger: As in previous years, the distant-water fleet, which is based mainly in Hull, Grimsby and, to a small extent, Fleetwood, provided about half the total weight of white-fish landings. There was a slight increase in the number of trawlers: 301 on December 31, 1953, compared with 292 in December 1952. Nine new vessels came into service and because of the high rate of building before and immediately after the last war the fleet remains, except for a very few vessels, a modern one. The weight of their catch was down by 7.5 percent and its value by 6.8 percent in comparison with the previous year.

Although the average ex-vessel price realized increased slightly from 42s. (US $5.88) to 42s. 6d. (US$5.95) per cwt. (112 pounds), the fall in production and gross receipts was serious. Many requisites of fishing and maintaining the fleet increased in price. The measures taken by the vessel owners themselves, and the fact that a large quantity of fish caught by the distant-water fleet failed to be sold in the fresh fish market, also points to the difficulties.

The Authority, however, still does not possess accurate knowledge of the costs and earnings of this section of the industry. After the Authority had stated in their Second Annual Report that it would be advantageous to have an up-to-date knowledge of the trading operations of distant-water vessels, the British Trawlers' Federation offered voluntarily to provide the necessary information on every vessel in the group.

Lay-Up Policy: Regarding the trawler owners' action in laying-up vessels--they laid up 20 percent of the vessels and restricted the sale of a trawler's catch in the fresh fish market to 70 percent of its capacity--the report says:

"The effect on landings is not so great as may be supposed, because during the summer a part of the fleet is normally laid up for annual refit and overhaul, and because it is exceptional for a vessel of this class to land a catch much exceeding 70 percent of its capacity.

"The Trawler Owners' Committee took their action because supplies of distant-water fish, mainly cod and haddock, were greatly in excess of demand and, because they expected that this situation would continue. Indeed, during the summer, in spite of these restrictions on catching power and on landings, over 18,000 metric tons of edible fish remained unsold in the fresh fish market and were disposed of at unremunerative prices for salting or for reduction to fish meal. In October 1953, the period of the year when fish in general usually begins to be short, the lay-up provision was suspended, and was not resumed during the winter.

"Although the provisions of the Development Scheme may seem restrictive in their operation, and have incurred much criticism from both inside and outside the fish industry, the Authority does not consider that they have so far had a harmful effect on supplies or prices.

"It is true that, in addition to the regulation of catching and sales, the owners impose a minimum price, but this price, 4s. per stone (4 U.S. cents per pound) for cod, is below the estimated average cost

of production.

"In the Authority's view, no one can reasonably expect the owners to continue to catch more fish than the market can absorb and to sell large quantities at uneconomic prices."

Foreign Imports: On the question of regulating the imports of foreign-caught fish, the report recalls the Authority's recommendation that regulation of imports was desirable and their hope that a statutory scheme for regulating British landings (with which, under the General Agreement on Tariffs and Trade, a scheme for the control of imports must be associated) might be based on the Development Scheme.

"During the past year, there was an exchange of views between the Authority, the Fisheries Departments, and the representatives of the distant-water trawler owners.

"The Authority understands that the trawler owners are now elaborating their proposals with a view to further discussion.

"A solution of the problem is not easy: it will need to provide a financial return to British owners sufficient to ensure the proper replacement of vessels, to conform with the international obligations of the country, and at the same time to safeguard the continuance of supplies at reasonable prices to the public. But the Authority believes that regulation by a statutory body is far preferable, either to a return to unregulated conditions which may in time undermine the efficiency of the distant-water fleet or to restrictions imposed by the industry itself which are bound to arouse suspicion and mistrust."

Iceland Dispute: On the Icelandic dispute the report says the Icelandic claim that their new limits were justified by the decision in the Anglo-Norwegian case had never been accepted by H.M. Government, "who made repeated efforts in the course of the year to find means of resolving the dispute in consultation with the Icelandic Government. These efforts were unsuccessful, and H. M. Government eventually informed the Icelandic Government that they were unable to offer further suggestions for the settlement of the dispute but that they would be willing to consider any constructive proposals that the Icelandic Government might feel able to put forward. The Authority understands that there have been no developments as between the two Governments since that time."

The ban on the purchase of Icelandic fish was strongly challenged in the autumn of 1953, says the report, by Mr. George Dawson, "a financier with no previous connection with the industry, who had entered into an agreement with the trawler owners of Iceland to distribute their fish in this country."

Between October 15 and November 19, seven Icelandic vessels discharged a total of about 1,400 metric tons of fish at Grimsby.

"Although a large number of merchants at port dissented from their Association's policy of upholding the ban, only one bought fish from the financier. The trawler officers, realizing that a refusal to sail would on this occasion embarrass the majority of merchants who supported them, undertook to continue to land fish on condition that it was not sold to merchants who bought Icelandic fish. The trawler owners for their part withheld supplies from the one merchant who bought Icelandic fish."

Subsequently, the financier withdrew from the field.

Fishing Limits: Regarding the proposal to extend British fishing limits, "strongly supported by the inshore fishermen, particularly those of Scotland," in accordance with the principles of the judgment of the International Court in the Norwegian dispute, the report says the fishermen continued to urge this course during the year.

"The Authority, who had previously conveyed the views of the fishermen to the Fisheries Ministers for their consideration, maintained the position that they could not press H. M. Government on the issue because of its wider implications. In December 1953 the Government announced that they had decided to make no change. While sympathizing with the inshore fishermen, they concluded that

wider considerations arising out of the naval, mercantile and deep-sea fishing position of this country and colonial territories must take precedence."

Near- and Middle-Water Fishing: Dealing with the near- and middle-water fishery, the report points out that while the quantity of fish landed by near- and middle-water vessels decreased by 0.9 percent in comparison with the previous year, the value of the catch declined by 2.8 percent. The average ex-vessel price realized fell from 62s. 7d. (US$8.75) to 61s. 6d. (US$8.61) per cwt. (112 pounds). The number of vessels taking part in this fishing again declined markedly from 762 on December 31, 1952, to 713 a year later, a fall of 6.4 percent following a fall of 6.7 percent in the previous year.

However, during 1953, 10 new vessels came into service, a larger number than in any year since 1946.

The economic difficulties of the near- and middle-water fleet were again acute in 1953, but not so serious as in the previous year. The loss on the operations of the fleet as a whole, though still heavy, and the average loss per vessel, were considerably less than in 1952; and the proportion of profitable vessels, though not so high as in 1951, showed a recovery over 1952.

"The improvement may be attributed mainly to two causes. The more important one was the increase in the amount of subsidy received as a result of the addition from April 1, 1953, of a flat-rate payment. The other significant factor in reducing the net loss on the fleet's operations was an increase in the average catch per vessel; this in turn was due in part to a slight increase in the average number of days at sea, but was greater than could reasonably be expected from that cause alone."

Rebuilding the Fleets: Turning to the rebuilding of the fleet under the Government scheme of grants--entrusted to the Authority--which came into operation on August 11, 1953, the report comments that "the response of the industry was encouraging. By March 31, the Authority received 26 applications for grants for the construction of new near- and middle-water trawlers. Since then four applications have been received."

Grants approved for near- and middle-water vessels, amounted on March 31 to £361,010 (US$1,011,000). Almost every vessel for which a grant was payable also became the subject of a loan, and by March 31, the Authority approved loans amounting to £742,692 (US$2,080,000) for 23 new near- and middle-water vessels.

"The Authority is satisfied that their arrangements for the making of grants and loans are expeditious. An application which is straightforward and for which full particulars are furnished by the applicant takes only about three to four weeks to go through."

More Conservation Needed: On the question of conservation and the decision of the Permanent Commission set up under the International Fisheries Convention of 1946, to fix the minimum size of mesh at 75mm. and 70mm. and 100mm. for seine nets, according to areas, which came into force on April 5, the Authority "again wishes to record their view that other measures of conservation will need to follow those now in force if the danger of over-fishing is to be effectively met."

Volume of Subsidy: In the financial year 1953/54, the subsidy given in respect of near- and middle-water vessels since July 31, 1950, amounted to £1,001,451 (US$2,804,000) in England and Wales and to £652,145 (US$1,826,000) in Scotland. The total of £1,653,596 (US$14,630,000) compared with £1,161,748 (US$3,253,000) in the previous financial year.

"The basis of payment on a sliding scale was maintained at broadly the same rates as during the previous year, but from April 1953, because of the economic difficulties of the near- and middle-water sections, Ministers decided to make an additional payment at a flat rate of 4d. (4.4 US cents) per stone (14 pounds) for gutted and 3d. (3.3 US cents) per stone for ungutted white fish landed by near- and middle-water vessels and sold for human consumption.

"The Authority and the Committee for Scotland and Northern Ireland received representations from trawler owners

and fishermen that the flat rates of subsidy should be payable also on edible fish which remained unsold in the fresh fish market. They contended that when boat owners failed to sell fish of good quality because of the state of the market, over which they had no control, they needed the subsidy more than when all their fish was sold.

"The Authority, after consulting the Advisory Council, concluded that the proposal was reasonable, and decided in January to give it their support."

Inshore Fishing Grants: The number of applications for grants by inshore fishermen to the Authority was extremely satisfactory. Between August 11, 1953, when the scheme came into force, and the end of the financial year at March 31, 1954, there were 96 applications for new vessels, and 99 for new engines. Since March 31, 15 more applications have been received for vessels and five for engines. Amounts of grants approved up to March 31 were: for fishing vessels, £92,206 (US$258,177); and for engines, £21,594 (US$60,463).

Only a small proportion of applications were rejected by the Authority, and nearly all of them were in respect of engines. The Authority considered in most of the cases that where the hull was old or defective the installation of a new engine could not be justified.

Inshore fishermen may obtain loans, as well as grants, for vessels and engines, and nearly all who receive grants apply also for loans.

Up to March 31 the Authority approved loans amounting to £156,526 (US$438,273) in respect of 52 new inshore vessels, and to £35,527 (US$99,476) in respect of 52 engines.

The Authority took a further step to encourage and support the inshore fishing industry by offering in March to make loans for the acquiring, in certain circumstances, of nets and gear to be used in vessels of not more than 70 feet in length. The loans may cover up to 60 percent of the cost, and are repayable within three years. The rate of interest at March 31 was $2\frac{7}{8}$ percent.

The white fish subsidy is paid also to inshore fishermen and amounted in the financial year ended March 31 to £202,998 (US$568,394) in England and Wales, £404,302 (US$1,132,046) in Scotland, and £16,904 (US$47,331) in Northern Ireland. The total of £624,204 (US$1,747,771) compared with £557,895 (US$1,562,106) in the previous financial year.

What Fishermen Earn: The Authority continued its investigations into the costs and earnings of inshore fishermen.

The results show a fall in the earnings of the crews and in the net profits of English and Welsh vessels; on the other hand, the net profits of the Scottish vessels slightly increased. Inshore landings have gone up in the last two years. Since the sample was so small, only tentative conclusions can be drawn from the results, but it is clear that the subsidy has been a great help to the inshore fishermen in keeping their boats at sea.

Imports: Imports of white fish in the year ended March 31 were 67,861 metric tons, or 8.3 percent of the total supply; the percentage in 1952/53 was 11.1; in 1951/52, 16.3; and in 1938, 9.3. The imports in 1953/54 showed a marked drop from those of the previous year: in weight 31.1 percent, and in value 33.9 percent. The average value dropped from 86s. 1d. (US$12.05) to 82s. 7d. (US$11.56) per cwt. (112 lbs.).

The steepest fall was in "boxed fish," which is brought in by carrier vessels and consiged mainly to inland markets or retailers; here the decline was as much as 45.7 percent, in comparison with a decline of 11.8 percent in the fish landed directly from foreign fishing vessels.

To Help Exports: To encourage exports the Authority decided from December 1, 1953, to give financial assistance in the form of a rebate of the Authority's general levy paid on fish which is exported. Although the concession applies to all exports of white fish, it is likely to be of most significance for exports of the various kinds of processed fish.

"The Authority realizes that the effect of this assistance is limited, and

they would like to do more to increase sales outside the country. The subject was discussed during the year with several individual traders, some of whom, the Authority were glad to learn, had surveyed overseas markets, and with trade associations. The Authority intends to take the matter further with the industry."

Frozen Fish Scheme: The Authority's revised frozen fish scheme was based on proposals by the National Federation of Fish Quick Freezers.

"The rest of the industry, except the fish friers, objected to the scheme almost as strongly as to that of the previous year. Some disliked the Authority's engaging in trade, even in exceptional circumstances, and in particular their taking power to sell wet fish; others opposed the making of grants to one section of the industry out of the general levy; most of them considered that the scheme was unnecessary, and that adequate supplies of frozen fish would be produced without it.

"In view of these criticisms, the Authority considered modifications which would confine the scheme to the provisions of loans to quick-freezers for promoting the export trade in frozen fish or for the creation of a small reserve, and would limit the Authority's own purchases of fish for freezing to the smaller ports. The Authority is preparing a revised scheme for further consultation with the industry."

Canning Pilchards: Regarding the pilchard industry of Cornwall and Devon, the report says that while 1953 did not prove so difficult as was at first feared, the average price received by the fishermen for pilchards declined. "The Authority was glad to learn that, as a result of their representations, the Ministry of Agriculture and Fisheries would undertake a survey of the fishery, with the object of reducing the costs of catching and improving the quality of the catch. The Authority for their part intend to keep the marketing problems under close review. The provision of a fish meal factory for the Southwest will reduce the fishermen's fear of surpluses and encourage them to fish to the utmost capacity."

Surplus Sprats: The Authority again made arrangements for helping inshore fishermen dispose of their surplus catches of sprats. The Authority negotiated with reduction factories at Hull and Grimsby that they would accept consignments of sprats at a price of £9 10s. (US$25.31) per metric ton, delivered at the factory. The Committee for Scotland and Northern Ireland made the same arrangement with a factory at Aberdeen, and also assisted the fishermen in securing a considerable reduction in the freight rates for the fish.

To Help Cooperatives: Under the plan of assistance to cooperative organizations, the Authority is empowered to encourage voluntary arrangements for the selling of white fish and for the buying of materials and other requisites, and to give financial or other assistance in bringing such arrangements into operation. The plan provides for grants and loans.

"The Authority trusts that this offer of assistance will lead to the establishment of more cooperatives among inshore fishermen; their area officers have been instructed to encourage and assist the fishermen in their formation. ..."

In May 1953, on the recommendation of the Committee for Scotland and Northern Ireland, the Authority approved loans to the Arbroath Fishermen's Association Limited amounting to 80 percent of the cost of acquiring a lorry, new fish boxes, and premises and plant for processing.

In November 1953, the Orkney Fishermen's Society were given a grant towards the administrative expenses in their first year of operation and were assured that the Authority would consider loans for specific purposes if they were later required.

Small Ports Scheme: Consultations were held during the year on the Authority's Small Ports Marketing Scheme, which would, they hoped, insure more stable prices for inshore fishermen and spread their earnings more evenly over the year. The proposals, which include prescribed minimum prices, a price stabilization fund, to be used to purchase fish unsold on the market, and its disposal

for freezing, salting or fish meal, were welcomed by the Scottish fishermen's associations and accepted by representative organizations in England and Wales.

Wholesalers' and retailers' associations offered no objection of principle, says the report.

After the consultations, the Authority revised the draft and has submitted it to departments for preliminary consideration in order to avoid delay.

General Aid: Trade and area officers of the Authority endeavoured to assist the inshore fishermen in every practicable way: by encouraging and organizing the formation of associations; by suggesting and demonstrating improved methods of packing and marketing; and by promoting easier and quicker methods of operating.

The Authority and the Committee for Scotland and Northern Ireland also discussed with certain local authorities and associations the marketing difficulties at their ports. The Authority also made representations to the appropriate authorities against actions which might inflict hardship on fishermen and fish traders.

The Committee for Scotland and Northern Ireland gave special attention to the marketing problems of Northern Ireland, whose fishermen have great difficulty in disposing of their catches, mainly consisting of whiting, at prices which bring them a reasonable return. In February the Committee met the Ulster Sea Fishermen's Association, and agreed to be represented in a working party which is to examine the problem and to submit a scheme to the Authority.

Problem of Containers: The coastal wholesalers asked the Authority to continue the provisions of the Minister of Food's Returnable Containers Order, which he was intending to revoke, and after consulting other sections of the industry they published their proposed Regulations in October, requiring a seller of fish to charge, and the buyer to pay, a deposit of at least 5s. (70 U.S. cents) per box on returnable containers of a capacity of more than one stone, the deposit to be repaid on redelivery of the box in reasonably good condition.

A number of objections to the Regulations were received, mainly from the inland wholesalers who had long been opposed to the principle of a deposit charge and were anxious for fish to be dispatched in nonreturnable boxes. Ministers decided to confirm the Regulations, but only with modifications which provided for the gradual elimination of the deposit charge; it would cease to apply to all boxes after the end of the year, by which time the Ministers hoped that the Authority and the trade together might be able to work out a long-term box policy. The Order came into force on January 18.

The coastal wholesalers strongly opposed the modifications, which, they contended, made the deposit system impracticable to work or to enforce, and they pressed the Authority and Ministers to restore the Regulations to their original scope. The British Transport Commission said that to cover the consignment and redelivery of every box by appropriate documents would be very difficult and would slow down the return of the boxes; this in turn might hinder the distribution of fish from the ports. For these reasons the Authority decided not to recommend a return to the full scope of the Regulations and asked the coastal wholesalers to discuss what other methods were practicable of reducing their heavy costs in providing containers.

Profits of Retailers: During the year the Authority completed their investigation into the costs and earnings of fishmongers and fish friers. "But the number of traders who volunteered to cooperate by furnishing records of their transactions was so small in both sections that the samples could not be regarded as representative and to publish the results would be misleading." It was decided not to go on with these investigations until the Authority had obtained compulsory powers for the production of the necessary information.

Question of Merchants Profits: The Authority continued its investigation into the trading operations of coastal

merchants and inquiries made covered the year 1952. Because of the small number of merchants in the sample, the Authority points out that it is not representative of the coastal wholesaling trade generally. "The results, so far as they have value, show that the trading position worsened in 1952 in comparison with 1951, but was better than that of 1950."

Publicity: Regarding publicity, the report declares that "the biggest problem of the industry is to expand the demand for fish, and a large part of the Authority's revenue has been appropriated to publicity."

Press and display advertising were based on "The Whispering Fish," a little figure who has begun to be known and recognized.

Registering Retailers: For the registration of fishmongers and fish friers, the federations and associations of retail traders "gave invaluable help to the Authority by dispatching notices and forms to their members, and wide publicity was given by the lay and trade press and by the B. B. C."

By March 31 the register contained the names of 11,347 fishmongers, occupying 14,709 premises, and of 10,719 fish friers, occupying 11,295 premises; at some 1,500 of these premises both a wet and fried fish business was carried on. "The registration of fishmongers could, therefore, be taken as reasonably complete, but it was clear that very many friers had still to register."

The Authority decided not to begin enforcement action for the time being, but to try out other means of communication through markets and trade suppliers which they hope will be successful.

Venezuela

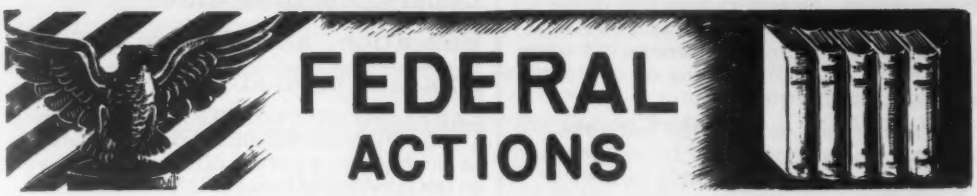
FOREIGN-FLAG FISHING: Venezuela claims territorial waters extending three nautical miles offshore. She claims a contiguous zone of 12 nautical miles offshore "for exclusive purposes of vigilance, security, and protection of the national interest," according to the legal adviser of the Venezuelan Foreign Office.

By the national constitution adopted in 1953, Venezuela claims jurisdictional rights over the continental shelf off her shores. Legislation now under study and which may be presented to the next Venezuelan congress for enactment is expected to provide for the regulation of commercial fishing in waters over the continental shelf. There has been to date no official Venezuelan definition of the extent of the continental shelf, according to an August 26 U. S. Embassy dispatch from Caracas.

Under existing legislation the 3-mile Venezuelan territorial waters zone is reserved exclusively for Venezuelan-flag fishing vessels. The zone of 9 nautical miles lying beyond the 3-mile territorial waters is not stipulated to be reserved exclusively to Venezuelan-flag fishing vessels, but foreign-flag vessels are not permitted to fish within that zone. Theoretically, the Venezuelan Government could issue permits to foreign-flag vessels for fishing within that zone, but no request for such permit could be expected to be acted upon until Venezuela has enacted the proposed law regulating offshore fisheries.

In the absence of legislation to regulate the offshore fisheries, Venezuela currently exercises no control over fishing by foreign-flag vessels beyond the 12-mile line.

It is not contemplated that the proposed legislation to regulate the offshore fisheries will reserve the waters over the continental shelf for the exclusive exploitation of Venezuelan vessels, but rather that it will control commercial fishing in those waters for the purpose of protecting and preserving the fisheries. It is the intention at present to divide the waters of the continental shelf into zones, certain of which will be closed to fishing and others to be considered open waters where fishing may be carried on under prescribed conditions.



Civil Service Commission

FISHERY MARKETING SPECIALIST EXAMINATION ANNOUNCED: An examination for Fishery Marketing Specialist (GS-5, 3,410 a year) was announced by the U. S. Civil Service Commission on October 12, 1954--Announcement No. 427(b). The register established from this examination will be used to fill positions in the Fish and Wildlife Service of the Department of the Interior in Washington, D. C., and throughout the United States. However, this same examination may be used to fill positions in other Federal agencies in Washington, D. C., and vicinity. There is no closing date for this examination.

Except for the substitution of education for experience as provided, applicants must have had three years of responsible experience in any position involving (a) the collection and compilation of market information and statistics on fishery products and the preparation from such data of analytical articles or bulletins for publication; or (b) marketing research requiring an intimate knowledge of commercial methods and practices in producing, processing, transporting, or marketing of fishery products.

Study successfully completed at an accredited college or university with specialization in fisheries and/or in economics, where the latter included not less than 12 semester hours in economics or marketing of food and in statistics, may be substituted for experience at the rate of one academic year of education for 9 months of experience, up to a maximum of 3 years of the required experience; study successfully completed at an accredited college or university with specialization in economics or marketing in fields other than food may be substituted for experience at the rate of one academic year of education for 6 months of experience, up to a maximum of 2 years of the required experience.

All competitors will be required to take a written test designed to measure their ability to understand, learn, and interpret regulations and practices and, in general, to perform the duties of the position. Examinations will be held at the places listed in the examination announcement.

Announcement No. 427(b), dated October 12, 1954 (giving full details and information), and application blanks are obtainable from the U. S. Civil Service Commission, Wash. 25, D. C., from any of the Commission's regional offices, or from any first or second-class post office.

Department of Commerce

BUREAU OF CENSUS

IMPORTS MISCLASSIFICATION OF CUBAN SPINY LOBSTERS: An investigation, made as a result of a recent inquiry, has revealed that the statistics for calendar year 1953 and January-June 1954 on imports from Cuba reported under Schedule A commodity number 0084 000, "Lobsters (including spiny lobsters and crawfish), canned," were overcounted due to the inclusion of imports which should have been reported under Schedule A commodity number 0083 000, "Lobsters (including spiny lobsters and crawfish), not canned."

The imports in question generally consisted of whole lobsters, lobster tails, or lobster meat variously described as being boiled, cooked, or frozen, and reported with the commodity number which applies to canned lobsters.

It was found, however, that the merchandise involved was not packed in hermetically sealed containers but usually in crates or in cartons or containers with cellophane windows.

Corrections to the 1953 and 1954 statistics affected by this investigation are summarized in the table below.

Revisions to Statistics on Imports of Lobsters from Cuba during Calendar Year 1953 and January-June 1954

Schedule A Number and Description	Period	As Published		As Revised	
		Quantity Lbs.	Value $	Quantity Lbs.	Value $
0084 000 Lobsters (including spiny lobsters and crawfish), canned	Year 1953	943,102	721,910	57,252	74,835
	Jan.-June 1954	540,673	362,023	12,813	16,568
0083 000 Lobsters (including spiny lobsters and crawfish), not canned	Year 1953	1,838,420	1,409,201	1/2,839,585	1/2,068,422
	Jan.-June 1954	524,364	349,729	1/1,073,573	1/ 709,061

1/ Includes other corrections found to be necessary during the course of this investigation.

These corrections will be presented in further detail in the "Revisions in Previous Month's Reports" section of a future issue of Report No. FT 110.

A similar situation may have existed in the statistics reported for imports of Cuban lobsters during previous years. However, no attempt is being made to determine the extent of misclassifications, if any, for years prior to 1953. Effective with the July 1954 data, steps were taken to prevent a recurrence of the errors in the future.

Department of Defense

ARMY QUARTERMASTER CORPS

SUCCESSFUL BIDDERS ON SURPLUS TRAWLERS: The Army Quartermaster Corps on August 3 issued an invitation for bids on five surplus trawlers located at Bremerhaven, Port of Embarkation, Germany. The deadline for bids was September 2, 1954.

The U. S. Army Property Disposal Service advises that the successful bidders on the five trawlers were as follows:

Name of Trawler	Successful Bidder
Pan Trade Andros Tern	Van de Grijp, Giessendam, Holland
Swell	Irving Usen, Boston, Mass.
Pacific Josephine Ess	Art Motors, Inc., Brooklyn 30, N. Y.

Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

LABELING OF FISH STICKS: Answering a U. S. Fish and Wildlife Service inquiry as to whether or not a ruling has been issued on the labeling of frozen fish sticks, the Deputy Commissioner of the Food and Drug Administration replied on October 14.

"...We have issued no formal ruling on this subject under the Federal Food, Drug, and Cosmetic Act. Several months ago, however, in preparation for the annual meeting at Cleveland, a Washington representative of the National Fisheries Institute contacted us to state that the industry seemed quite confused about how to label fish sticks. The particular point in question was whether or not the specific name of the fish need be stated on the label.

"We advised the Institute that in our opinion the Federal Food, Drug, and Cosmetic Act does require that the ingredient statement include a conspicuous declaration of the common or usual name of each variety of fish present in the package and that this, of course, must be accurate. We further stated that we did not consider that the statute authorized such legends as 'Haddock, Pollock and/or Cod'. ..."

Department of the Interior

FISH AND WILDLIFE SERVICE

SERVICE PUBLICATION WINS TOP AWARD IN MARKETING RESEARCH STUDIES: In competition with other federal agencies, the Department of the Interior won this year's top award in Marketing Research Studies. The American Marketing Association, through its Washington Chapter, selected unanimously the Fish and Wildlife Service entry, Survey of the Domestic Tuna Industry. The Certificate of Award was presented to the senior authors of the report--A. W. Anderson, Chief of the Branch of Commercial Fisheries, and W. H. Stolting, Assistant Chief of the Branch's Economics Section. At the Award's Dinner held

September 30 in Washington, Secretary McKay of the Department of the Interior was the main speaker.

THE WASHINGTON CHAPTER

OF THE

AMERICAN MARKETING ASSOCIATION

1954 AWARD IN MARKETING

PRESENTED TO

A. W. Anderson and W. H. Stolting

FOR A SIGNIFICANT CONTRIBUTION IN THE FIELD OF

Marketing Research Studies

BY FEDERAL GOVERNMENT PERSONNEL

ENTITLED

"Survey of the Domestic Tuna Industry"

Nelson A. Mills
1954 President of the Washington Chapter

Floyd J. Hocking
1953 President of the Washington Chapter

Leonard Kauffman
Chairman of Committee for Awards by Government Agencies

AMERICAN MARKETING ASSOCIATION Seal

SEPTEMBER 30, 1954

The report is a 435-page study of the long-range position of the domestic tuna industry. It was made at the request of the six Pacific Coast senators as a result of legislation introduced in Congress in 1952 to increase tariffs on imported tuna products.

In addition to the senior authors, 36 other fishery specialists contributed special sections to the report. Copies are available upon request from the Publications Unit, U. S. Fish and Wildlife Service, Washington 25, D. C.

* * * * *

NEW APPOINTMENTS IN BRANCH OF GAME FISH AND HATCHERIES: The promotion of Abram V. Tunison to Chief of the Service's Branch of Game Fish and Hatcheries was announced by the Secretary of the Interior on October 5. He succeeds Dr. O. Lloyd Meehean who was appointed recently as Assistant to the Director in charge of technical staff services.

William Hagen, Jr., succeeds Tunison as Assistant Chief of the Branch of Game Fish and Hatcheries. He has been chief of the section of salmon propagation since May 1950.

Abram V. Tunison

Tunison joined the Fish and Wildlife Service on September 1, 1944, as a fishery management technician assigned to the Cortland, N. Y., station. In December 1945 he was transferred to the headquarters office and promoted to the position of Assistant Chief of Game Fish and Hatcheries. Prior to his Federal service Tunison was employed by the New York State Conservation Department at Cortland, N. Y., from July 1932 to September 1944.

Hagen has been with the Fish and Wildlife Service since 1937 when he was appointed as a fishery biologist. He served at various fish hatcheries throughout the country. In 1941 he was transferred to the Leavenworth, Wash., station during the start of the Grand Coulee salmon salvage project. The following year he became regional biologist in the Portland, Oreg., regional office. In July 1945 he was promoted to the position of regional supervisor of fish culture. In May 1950 he was transferred to the headquarters office in Washington to head the new section of salmon propagation. In this position he was responsible for directing the Atlantic and Pacific salmon programs, including the important Lower Columbia River Fisheries Development program.

Tariff Commission

RULES ISSUED COVERING INVESTIGATIONS OF DUMPING: The U. S. Tariff Commission published in the October 8 Federal Register a new Part 208 to its regulations to cover investigations of dumping injury to domestic industries. The Commission's action followed publication by the Treasury Department on October 6 of an amendment to its Customs Regulations to conform to provisions

of the Customs Simplification Act of 1954 transferring determination of injury in dumping cases from the Customs Bureau to the Tariff Commission, effective October 1, 1954.

Investigations under the Antidumping Act of 1921, as amended by P. L. 768 (Customs Simplification Act of 1954), are initiated by the Customs Bureau to determine whether a class or kind of foreign merchandise is being, or is likely to be, sold in the United States or elsewhere at less than its fair value. If an affirmative determination is made, the Commissioner of Customs must so advise the Tariff Commission. The Tariff Commission will then institute an investigation to determine "whether an industry in the United States is being, or is likely to be, injured, or is prevented from being established, by reason of the importation into the United States of a class or kind of foreign merchandise when the Secretary of the Treasury has determined is being, or is likely to be, sold in the United States or elsewhere at less than its fair value."

The Tariff Commission rules provide for public hearings, if the Commission decides there is sufficient reason for them, and for the submission of written statements after a notice of investigation is published in the Federal Register. The Commission will notify the Secretary of the Treasury of its determination in a dumping case within three months from the receipt of advice from the Customs Bureau that an investigation should be made.

Treasury Department

BUREAU OF CUSTOMS

AUTHORITY TO DETERMINE INJURY IN DUMPING CASES TRANSFERRED TO TARIFF COMMISSION: The Treasury Department has amended the Customs Regulations to conform to provisions of the Customs Simplification Act of 1954, transferring determination of injury in dumping cases to the Tariff Commission, effective October 1.

Treasury Decision 5313, published in the Federal Register of October 6, amends Section 1417 of the Customs Regulations, relating to procedure under the Antidumping Act of 1921 as follows:

"S. 1417 Findings of Commissioner of Customs; determination of injury. (a) When a notice of withheld appraisement has been issued on account of suspected dumping, the Commissioner of Customs will proceed as promptly as possible to determine whether the merchandise in question is in fact being, or is likely to be, sold in or to the United States at less than its fair value. If the determination is affirmative, he will advise the United States Tariff Commission accordingly.

"(b) If the Tariff Commission determines that there is, or is likely to be, the injury contemplated by the statute, the Commissioner of Customs, with the approval of the Secretary of the Treasury, will make the finding contemplated by section 201(a) of the Antidumping Act, as amended, with respect to the involved merchandise."

Eighty-Third Congress

(Second Session)

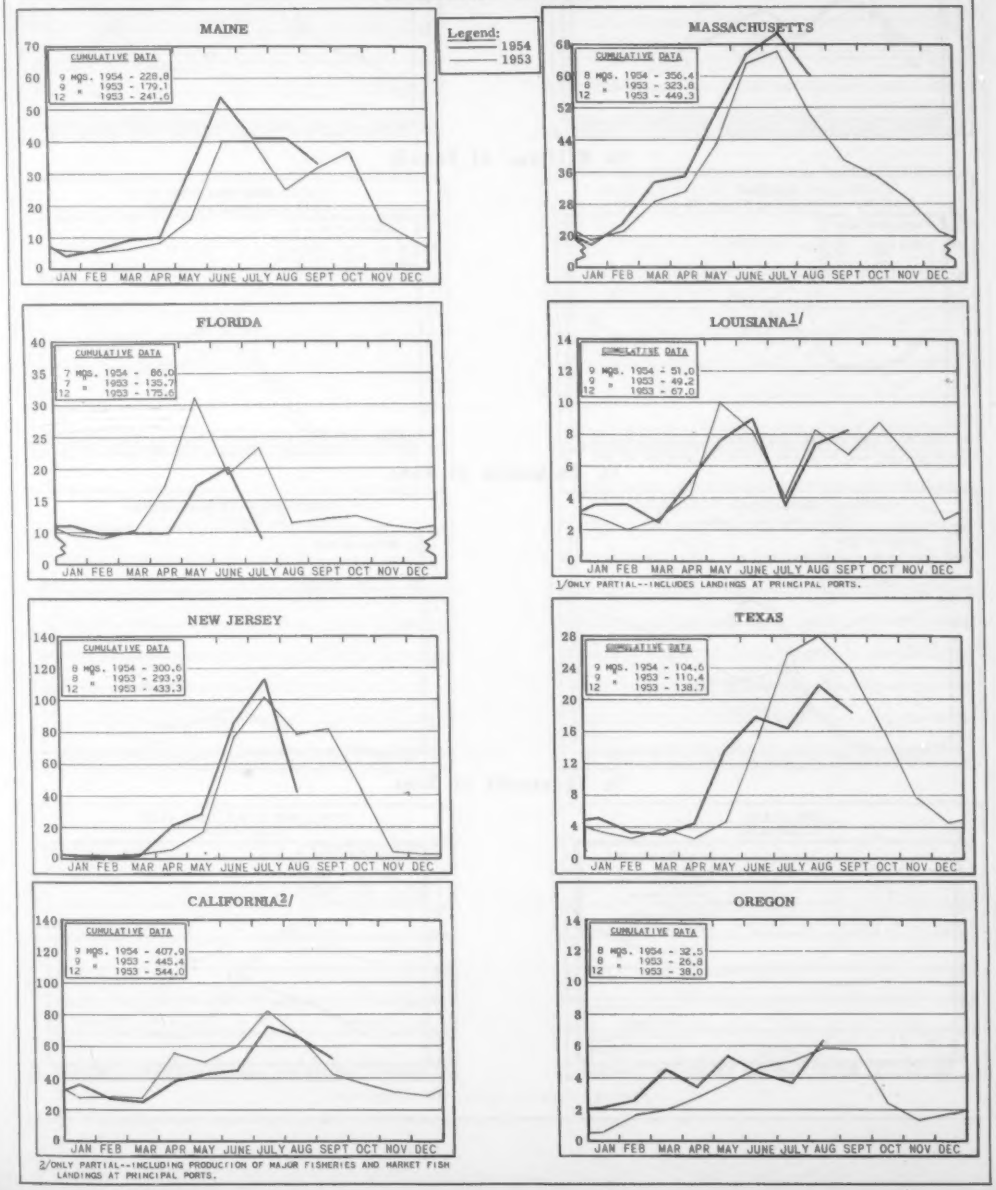
AUGUST 1954

On August 20, 1954, the Senate temporarily adjourned, pursuant to H. Con. Res. 266; the House adjourned sine die.

FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

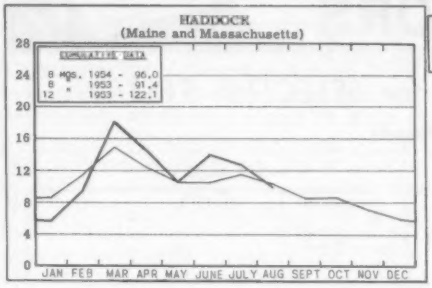


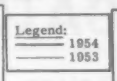
1/ONLY PARTIAL--INCLUDES LANDINGS AT PRINCIPAL PORTS.

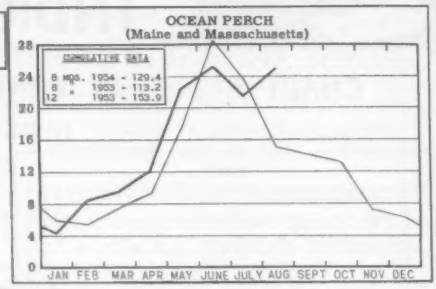
2/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds







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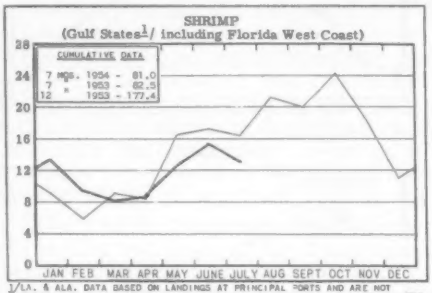

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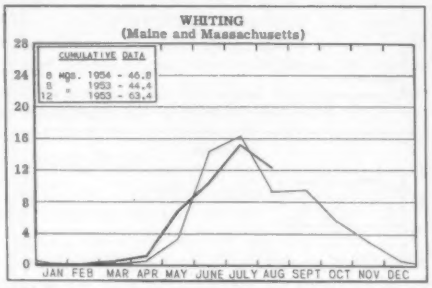
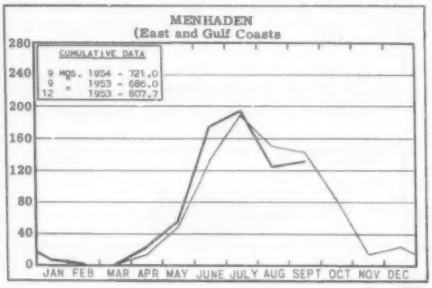
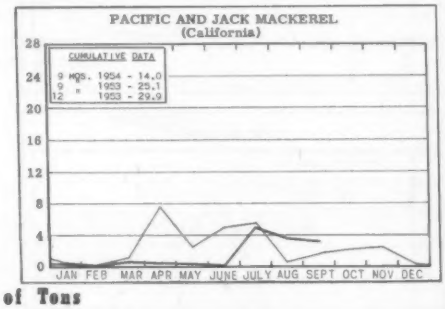


In Thousands of Tons





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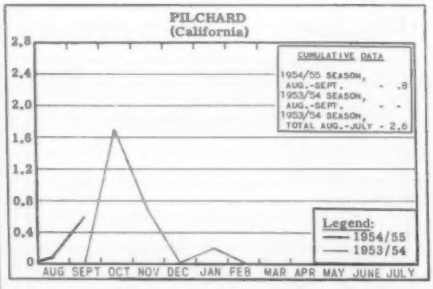


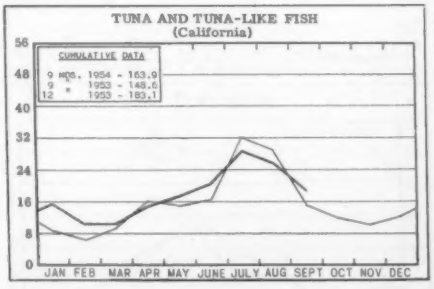
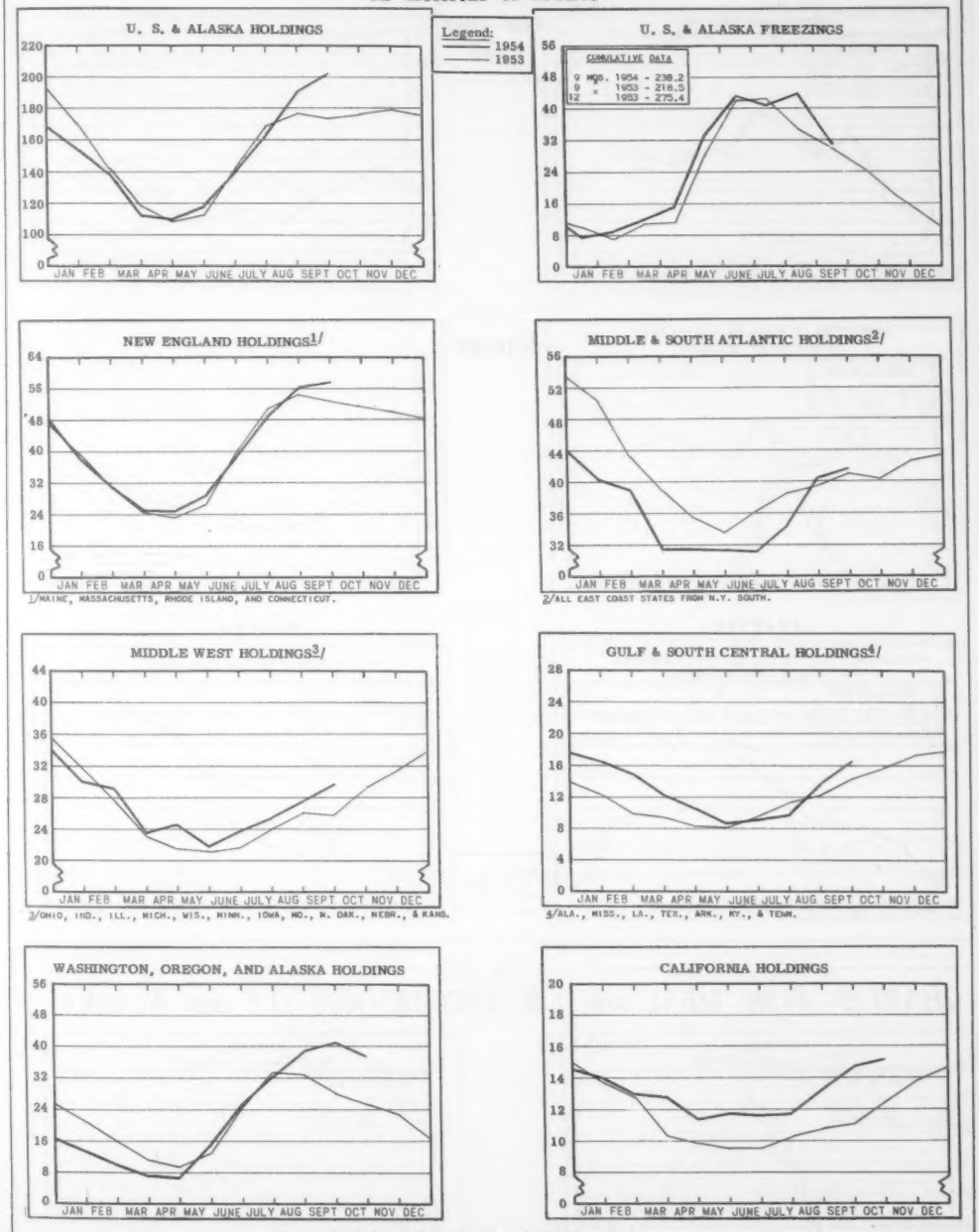


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds


U. S. & ALASKA HOLDINGS
Legend:
1954
1953
U. S. & ALASKA FREEZINGS
CUMULATIVE DATA
9 MOS. 1954 - 238.2
9 " 1953 - 218.5
12 " 1953 - 275.4
NEW ENGLAND HOLDINGS1/
MIDDLE & SOUTH ATLANTIC HOLDINGS2/
MIDDLE WEST HOLDINGS3/
GULF & SOUTH CENTRAL HOLDINGS4/
WASHINGTON, OREGON, AND ALASKA HOLDINGS
CALIFORNIA HOLDINGS
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT.

2/ALL EAST COAST STATES FROM N.Y. SOUTH.

3/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR., & KANS.

4/ALA., MISS., LA., TEX., ARK., KY., & TENN.

*Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pound

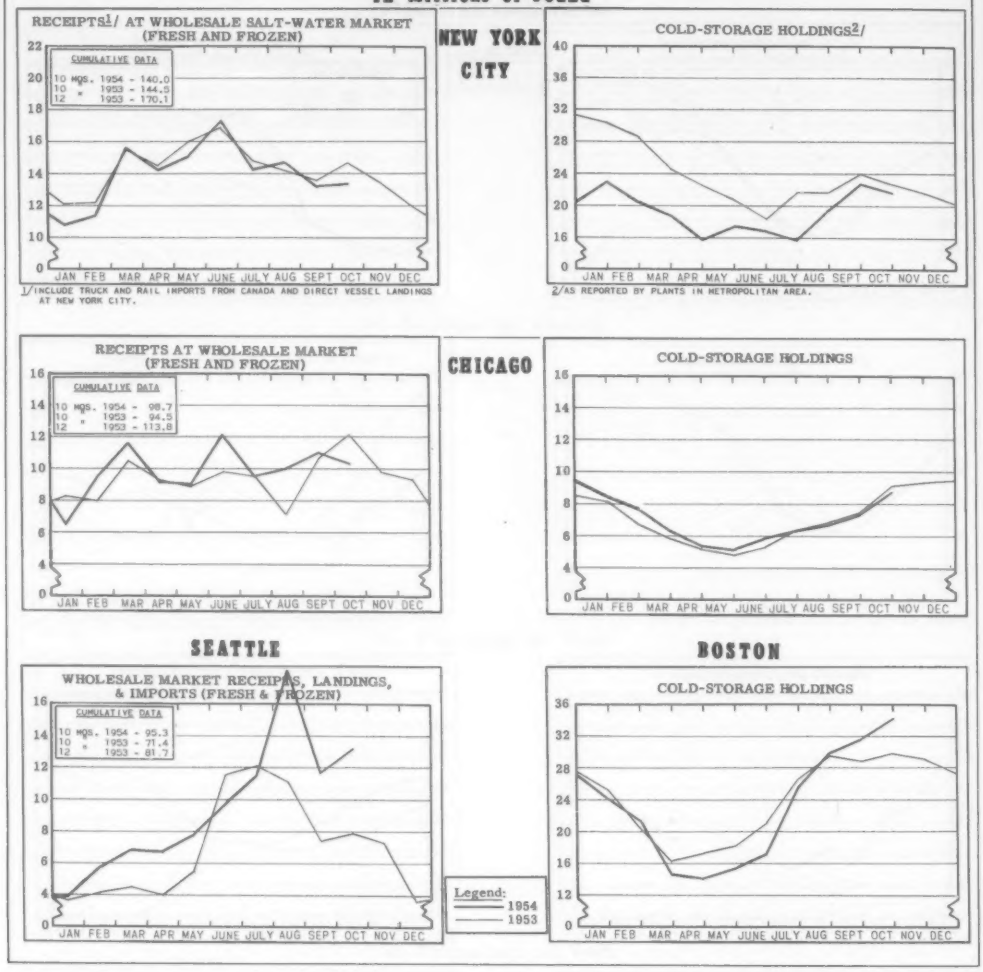

RECEIPTS1/ AT WHOLESALE SALT-WATER MARKET (FRESH AND FROZEN)
CUMULATIVE DATA
10 MOS. 1954 - 140.0
10 " 1953 - 144.5
12 " 1953 - 170.1
NEW YORK CITY
COLD-STORAGE HOLDINGS2/
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1/INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.
2/AS REPORTED BY PLANTS IN METROPOLITAN AREA.
RECEIPTS AT WHOLESALE MARKET (FRESH AND FROZEN)
CUMULATIVE DATA
10 MOS. 1954 - 98.7
10 " 1953 - 94.5
12 " 1953 - 113.8
CHICAGO
COLD-STORAGE HOLDINGS
SEATTLE
WHOLESALE MARKET RECEIPTS, LANDINGS, & IMPORTS (FRESH & FROZEN)
CUMULATIVE DATA
10 MOS. 1954 - 95.3
10 " 1953 - 71.4
12 " 1953 - 81.7
BOSTON
COLD-STORAGE HOLDINGS
Legend:
1954
1953

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

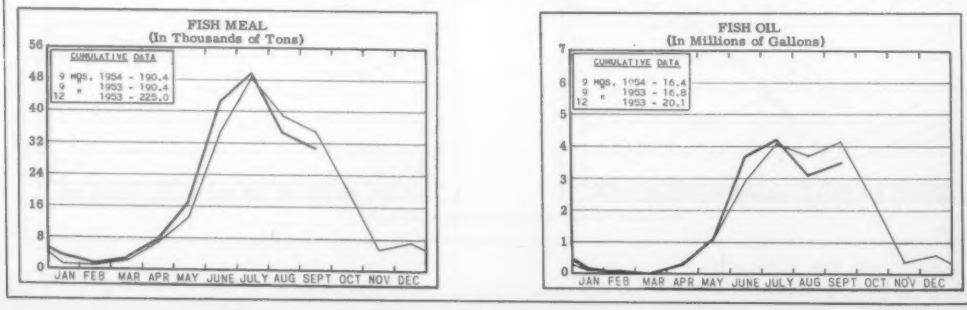
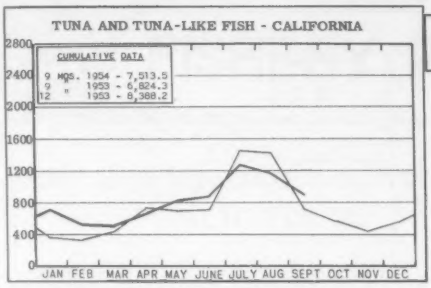
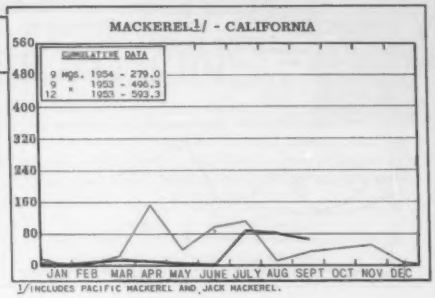

FISH MEAL
(In Thousands of Tons)
CUMULATIVE DATA
9 MOS. 1954 - 190.4
9 " 1953 - 190.4
12 " 1953 - 225.0
FISH OIL
(In Millions of Gallons)
CUMULATIVE DATA
9 MOS. 1954 - 16.4
9 " 1953 - 16.8
12 " 1953 - 20.1
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

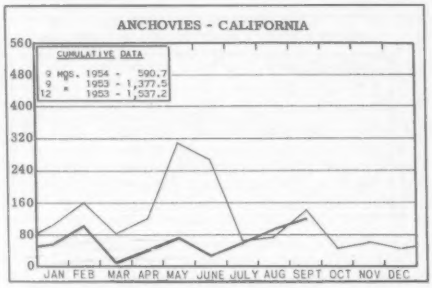
CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

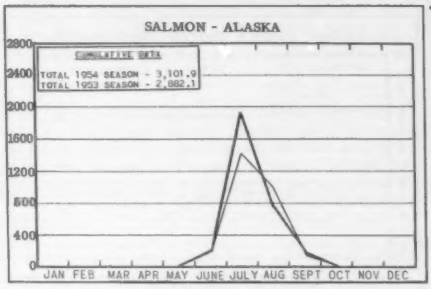
In Thousands of Standard Cases

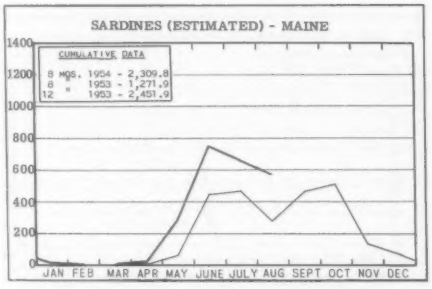




1/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.

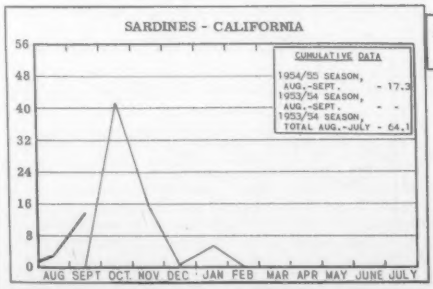






STANDARD CASES

Variety	No. Cans	Can Designation	Net Wgt.
SARDINES	100	¼ drawn	3¾ oz.
SHRIMP.....	48	--	5 oz.
TUNA	48	No. ½ tuna	6 & 7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
SALMON	48	1-pound tall	16 oz.
ANCHOVIES	48	½ lb.	8 oz.



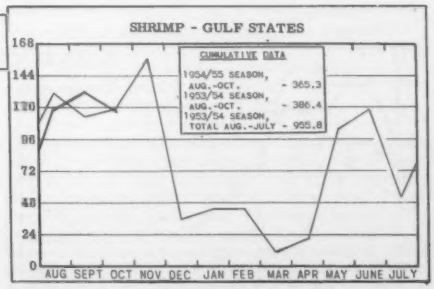
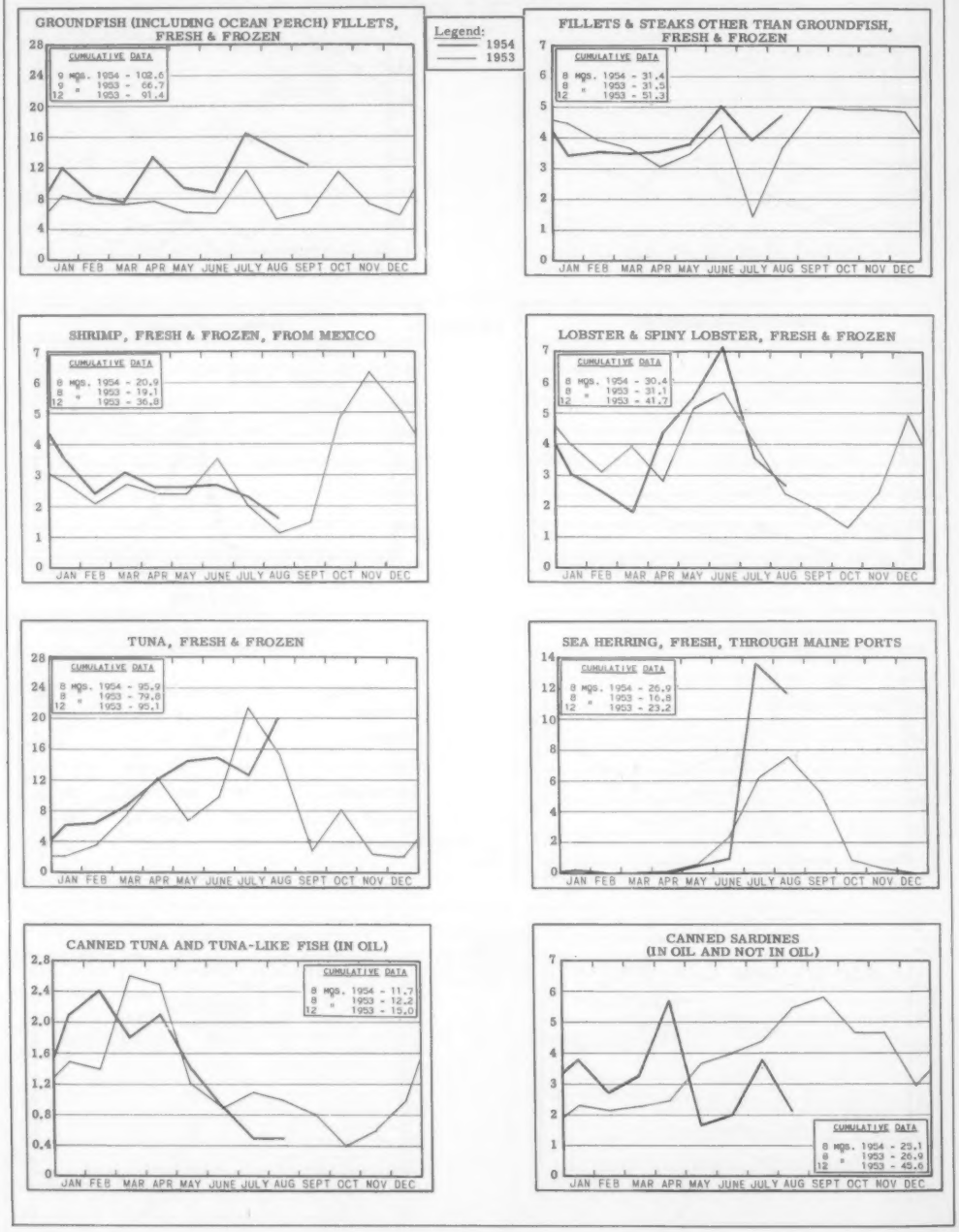


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds


GROUNDFISH (INCLUDING OCEAN PERCH) FILLETS, FRESH & FROZEN
CUMULATIVE DATA
9 MOS. 1954 - 102.6
9 " 1953 - 66.7
12 " 1953 - 91.4
Legend:
1954
1953
FILLETS & STEAKS OTHER THAN GROUNDFISH, FRESH & FROZEN
CUMULATIVE DATA
8 MOS. 1954 - 31.4
8 " 1953 - 31.5
12 " 1953 - 51.3
SHRIMP, FRESH & FROZEN, FROM MEXICO
CUMULATIVE DATA
8 MOS. 1954 - 20.9
8 " 1953 - 19.1
12 " 1953 - 36.8
LOBSTER & SPINY LOBSTER, FRESH & FROZEN
CUMULATIVE DATA
8 MOS. 1954 - 30.4
8 " 1953 - 31.1
12 " 1953 - 41.7
TUNA, FRESH & FROZEN
CUMULATIVE DATA
8 MOS. 1954 - 95.9
8 " 1953 - 79.8
12 " 1953 - 95.1
SEA HERRING, FRESH, THROUGH MAINE PORTS
CUMULATIVE DATA
8 MOS. 1954 - 26.9
8 " 1953 - 16.8
12 " 1953 - 23.2
CANNED TUNA AND TUNA-LIKE FISH (IN OIL)
CUMULATIVE DATA
8 MOS. 1954 - 11.7
8 " 1953 - 12.2
12 " 1953 - 15.0
CANNED SARDINES (IN OIL AND NOT IN OIL)
CUMULATIVE DATA
8 MOS. 1954 - 25.1
8 " 1953 - 26.9
12 " 1953 - 45.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number Title

CFS-1027 - Massachusetts Landings, June 1954, 8 pp.
CFS-1031 - Texas Landings, July 1954, 3 pp.
CFS-1032 - Florida Landings, May 1954, 6 pp.
CFS-1038 - Mississippi Landings, July 1954, 2 pp.
CFS-1039 - Fish Meal and Oil, July 1954, 2 pp.
CFS-1040 - Frozen Fish Report, August 1954, 8 pp.
CFS-1045 - Maine Landings, July 1954, 4 pp.
CFS-1048 - Alabama Landings, July 1954, 2 pp.
FL - 255 - Fishery Motion Pictures (revised), 6 pp.
FL - 410 - Fish and Shellfish Preferences of Household Consumers-1951, Part IV, 53 pp.
FL - 417 - U. S. Import Classification and Duties of Fishery and Wildlife Commodities, January 1, 1954, 36 pp.
Sep. No. 380 - Exploratory Shrimp Fishing in the Gulf of Mexico, Summary Report for 1952-54.
Sep. No. 381 - Observation of Japanese High-Seas Salmon Gill-Net Fishery off Hokkaido.

FL-418 - Food Fishes with Fins and Scales, 9 pp., processed. The anatomy of fishes in its bearing on the requirements of certain religious dietary regulations, with a note on the source of cod and other liver oils. Also contains a partial list of common food fishes that have both fins and scales.

THE FOLLOWING SERVICE PUBLICATION IS FOR SALE AND IS AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Propagation and Distribution of Food Fishes for the Calendar Years 1951-1952, by Lee M. Duncan and O. Lloyd Meehean, Statistical Digest 32, 38 pp., printed, 20 cents, 1954. Describes the general program of the Federal hatchery system in the propagation and distribution of food fish and the compilation of fish distribution data. Also includes statistical data for the calendar years 1951-52 on fish and fish eggs distributed, and assigned to Federal agencies and state fish commissions. Distribution of fish and fish eggs by stations, and distribution of fish by states are also covered.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATIONS ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

Age and Growth of Lake Sturgeon from Lake St. Francis, St. Lawrence River. Report on Material Collected in 1947, by Jean-Paul Cuerrier and George Roussow, 13 pp., illus., printed. (Reprinted from The Canadian Fish Culturist, no. 10, May 1951, pp. 17-29.) Institute of General Biology and Zoology, University of Montreal, Que.

"Annual Growth Rings and Rate of Growth of the Giant Scallop, Placopecten magellanicus (Gmelin) in the Digby Area of the Bay of Fundy," by J. A. Stevenson and L. M. Dickie, article, Journal of the Fisheries Research Board of Canada, vol. XI, no. 5, September 1954, pp. 660-671, illus., printed. Fisheries Research Board of Canada, Ottawa, Canada. The growth rings on the valves of scallops collected from the Digby area of the Bay of Fundy are formed only once a year during the winter. Observations of special collections of small scallops have also shown the position of the first growth ring. This information has been used to construct a general growth curve from measurements of annuli on scallops from the Digby area.

Bulletin of Tokai Regional Fisheries Research Laboratory, No. 7 (Contribution B), June 1954, illus., printed in Japanese with summaries in English. Tokai Regional Fisheries Research Laboratory, Tsukishima, Tokyo, Japan. A collection of reprints covering, among other subjects, the following: fishing gear and methods; fisheries machinery; preservation and cause of spoilage; fish oils and vitamins; and skin and leather of aquatic animals.

"Campanha Baccalhoeira (The Cod Fishery Campaign)," by Mark Ronayne, article, Trade News, vol. 7, no. 1, July 1954, pp. 3-6, illus., printed. Director of Information and Educational Service, Department of Fisheries, Ottawa, Canada. Describes the annual "Campanha Baccalhoeira"--the cod fishery campaign--an expedition, steeped in tradition, that takes the Portugal sailing vessel fleet, the last of its kind in the world, to the

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teeming Grand Bank of Newfoundland and thence to Greenland. There is evidence, Portuguese say, that the history of the campaign dates back to the mid-fifteenth century when voyages of discovery to the Atlantic's western shores were the current European rage and the quest for cod spurred intrepid, venturesome fishermen to rove farther and farther asea. This brought them some 500 years ago to the Grand Banks, the cod Klondyke of the Northwest Atlantic just off Canada's east coast and they have been going back regularly ever since. The entire catch is marketed within Portugal with the exception of small quantities that are sold in Portugal's overseas provinces in East and West Africa. Thus, the fruits of the campaign offer no competition in foreign markets to exporting countries, the article points out.

"The Canadian Atlantic Scallop Fishery," by J. S. MacPhail, article, Trade News, vol. 7, no. 2, August 1954, pp. 5-7, illus., printed. Department of Fisheries of Canada, Ottawa, Canada. The giant or sea scallop Placopecten magellanicus, which is found along the northwest Atlantic coast from Newfoundland to Cape Hatteras, has become a commercially important species in recent years. This article describes the Bay of Fundy fishery where the largest and most productive scallop beds are found along the Digby shore. Design details are given of a typical Digby scallop dragger. The shucking procedure and method of handling the meats are also described.

"The Case of the Groundfish Fillets," by R. G. C. Smith, article, Foreign Trade, vol. 102, no. 3, August 7, 1954, pp. 5-6, printed, single copy 20 cents. The Queen's Printer, Government Printing Bureau, Ottawa, Canada. This report discusses some of the reasons for the President's decision to reject the U. S. Tariff Commission's recommendation for increased protection for the United States fishing industry and the probable effects upon the Canadian fishing industry.

Compilation of Georgia Laws and Regulations Pertaining to Upland Game, Fresh Water Fishing and Commercial Salt Water Fishing, 110 pp., printed. State Game and Fish Commission, 412 State Capitol, Atlanta, Georgia, April 1, 1954.

"A Contribution to the Life History of the Swordfish, Xiphias gladius Linnaeus, from the South Atlantic Coast of the United States and the Gulf of Mexico," by George F. Arata, Jr., article, Bulletin of Marine Science of the Gulf and Caribbean, vol. 4, no. 3, 1954, pp. 183-243, illus., printed. Marine Laboratory, University of Miami, Coral Gables (University Branch) 46, Florida. Thirty-three postlarval specimens of swordfish, Xiphias gladius Linnaeus, from the South Atlantic coast of the United States and the Gulf of Mexico, ranging in standard length from 6.1 mm. to 192.1 mm. are discussed. Nine specimens are illustrated and fourteen detailed descriptions are given, bringing together developmental characters for the range presented. Ten adults from Cuba and four from Canada are used to establish characteristic adult body proportions. The range of adult fish is given and the occurrence of females with varying stages of ovaries is mentioned. A hypothesis on the spawning time and area for the region concerned is given as taking place from the lower Caribbean to the South Carolina coast, probably year round, with the height of the season in Florida and Georgia waters from April through September. The stomach contents of 27 larval specimens are analyzed, and temperature, salinity, and oxygen concentrations are given for stations occupied along the approximate axis of the Gulf Stream.

"The Development of Ceylon's Fishing Industry," by E. R. A. de Zylva, article, Journal of the Bombay Natural History Society, vol. 52, no. 1, April 1954, pp. 142-148, printed. Bombay Natural History Society, 114 Apollo Street, Bombay 1. This article describes some of the problems in the development of Ceylon's fisheries; mechanized fishing boats; the Canadian-sponsored Colombo Plan project; shore facilities; brackish-water fisheries; fresh-water fisheries; and plans for the future development of the fisheries.

Diseases of Fishes of the Western North Atlantic. II. Ichthyosporidium Diseases of the Sea Herring (Clupea Harengus), by Carl J. Sindermann and Leslie W. Scattergood, Research Bulletin No. 19, 40 pp., illus., printed. Department of Sea and Shore Fisheries, Vickery-Hill Building, Augusta, Maine, June 1954.

East African Fisheries Research Organization Annual Report, 1953, 49 pp., illus., printed. East African Fisheries Research Organization, P. O. Box 343, Jinja, Uganda, 1954. Discusses progress made on the various investigations: hydrology of the East African lakes and dams; various chemical factors affecting the growth of algae; growth rate of Tilapia; tropical lake fertility; factors affecting the onset of maturity in several species of Tilapia; physical and chemical condition obtaining in papyrus and water-lily swamps; and snails and snail-eating Haplochromis. Also includes recommendations for increasing the yield of fish from the East African lakes.

"Field Tests of Stainless Steel and Tantalum Wire with Disk Tags on Striped Bass," by John E. Skinner and A. J. Calhoun, article, California Fish and Game, vol. 40, no. 3, July 1954, pp. 323-328, illus., printed. California Department of Fish and Game, 926 J Street, Sacramento 14, California.

Fish Farming and Inland Fishery Management in Rural Economy, by W. H. Schuster and G. L. Kesteven, FAO Fisheries Study No. 3, 72 pp., illus., printed, $1.00. Food and Agriculture Organization of the United Nations, Rome, Italy, July 1954. (For sale by International Documents Service, Columbia University Press, New York 27, N. Y.). The purpose of this report is to present a brief account of the role of the fisheries of inland waters in rural economies, and

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to indicate the ways in which that role might be enhanced and made more significant. It has been prepared for the use of fishery administrators to assist them to understand the nature of these fisheries and the part which they play. The text is not a description of the techniques and practices of fish culture and fishery management; for a detailed account of those practices and for guidance in development of inland fisheries the reader is referred to specialized texts. In this publication these techniques are mentioned only so far as this has been necessary to give a clear picture of what is meant by inland fisheries and of what is involved in the planning of activities to make full use of the possibilities of these industries. At the end of this work there is a brief selected bibliography as a guide to the reader who needs to study further. Discussed by the author are the nature of fish farming operations and of inland fishery management; the general economic role of inland fisheries; the relations of fish farming and inland fishery management with other rural activities; and the planning and implementation of inland fishery development schemes.

Fish and Fisheries of the Chilka Lake with Statistics of Fish Catches for the Years 1948-1950, by S. Jones and K. H. Sujansingani, 92 pp., illus., printed. (Reprinted from Indian Journal of Fisheries, vol. 1, 1954, pp. 256-344.) Central Fisheries, West Hill P. O., Calicut 5, Malabar, India.

Fisheries in Burma, by U. Khin, 189 pp., illus. printed. Superintendent, Government Printing and Stationery, Rangoon, Burma, 1948.

Fiskeri-Berentning for Aret 1953, 262 pp., illus., printed, in Danish with English and French resumes. I Kommission Hos G. E. C. Gad, Kobenhavn, Denmark. This report contains detailed statistics on the Danish fisheries for the calendar year 1953. Included in the report are data on number of fishermen, number of fishing craft, value of fishing vessels, catch by species, landed value of the catch, resumes by fisheries, and imports and exports of fishery products. Also includes names of fish and shellfish in Danish, Latin, English, Swedish, German, and French.

(Florida) Summary of Florida Commercial Marine Fish Landings for 1953 (Report to Florida State Board of Conservation), by Billy F. Greer with the collaboration of Irving J. Cohen, 28 pp., processed. The Marine Laboratory, University of Miami, Coral Gables, Florida, July 1954. Contains tables summarizing the total Florida commercial landings and value of food fish, nonfood fish, shellfish, and miscellaneous items by species for the year 1953; a breakdown of the landings between east coast and west coast; and landings and value by county and by species. This is the fourth year in which a summary has been compiled in the cooperative program between the U. S. Fish and Wildlife Service and the Marine Laboratory of the University of Miami on behalf of the Florida State Board of Conservation.

(FOA) Financed Commodity Procurement, 28 pp., processed. Foreign Operations Administration, Office of Public Reports, Wash. 25, D. C., August 1954. Describes small business services; how FOA-financed buying is done; FOA financing procedure; Procurement Information Bulletins; buying in individual countries; source countries; engineering and other technical services; selling for export; and the Contact Clearing House Service. The Department of Commerce field offices and the Small Business Administration field offices are listed.

"A Fungus Disease in Clam and Oyster Larvae," by H. C. Davis, V. L. Loosanoff, W. H. Weston, and C. Martin, article, Science, vol. 120, no. 3105, July 2, 1954, pp. 36-38, illus., printed. Science, 1515 Massachusetts Ave. NW., Washington 5, D. C.

"Further Studies of the Behavior of the Pacific Sardine (Sardinops Caerulea) in an Electrical Field," by Anatole S. Loukashkin and Norman Grant, Proceedings of the California Academy of Sciences, Fourth Series, Vol. XXVIII, No. 6, 323-337, illus., printed. California Academy of Sciences, San Francisco, California, July 9, 1954. This report presents results of a continuation of experimental studies of galvanotropic responses of the Pacific sardine, first reported in April 1952 (Groody et al.). The present studies used 5 different types of current forms: (1) the square wave form of direct current pulsating at low frequencies, (2) application of higher frequencies of pulsating direct current using triangular and square wave forms, (3) application of half-wave rectified 60-cycle alternating current, (4) application of quarter-wave rectified 60-cycle alternating current, and (5) application of the condenser discharge impulse. Sardines were found to be highly susceptible to stimulation by electrical currents, showing some reaction even at the lowest values of average current density. Once the optimal range of average current density required to produce directional swimming and control of fish movement was established, the reactions of the sardines always remained identical regardless of the number or sequence of tests. Length of time in captivity had no effect on the sensivity or reactions of the sardines to the electric current. On the other hand, two other species of fish, the topsmelt and jacksmelt, usually became conditioned to the current after 5 to 10 successive stimulations. It was found that when the fish movements were fully controlled by the proper value of average current density, the natural fright reactions are suppressed and the fish can be easily picked up by hand. All wave forms tested can produce full control of fish movements, forcing them to the positive pole where they are held until the current is turned off. Current density was found to be the most critical factor in producing forced directional swimming and control of fish movements. Average current densities above the optimal range may cause temporary paralysis or even death of the fish, while those below will produce only a slight directional impulse or none at all. The optimal average current density required to produce "satisfactory" directional swimming and controlled movements of fish appears to vary inversely with the size of the fish. Any frequency of current pulsation from 2 to 80 per second (the highest tested) can give full control of fish movement and directional swimming. A pulse frequency as high as 60 to 80 per second reduced the average optimal current density to

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50 percent of the amount required at a frequency of 5 per second. The use of either continuous or interrupted half-wave rectified 60-cycle alternating current produced the most effective results as far as smoothness of operation and school coordination were concerned. A substantial decrease in power requirements was obtained with a condenser discharge pulse operating at the very low average current densities of 0.4 to 0.8 milliampere per square inch of cross-sectional area of water.

--D. E. Powell

Guide to the Whales, Porpoises and Dolphins of the North-East Pacific and Arctic Waters of Canada and Alaska, by Gordon C. Pike, Circular No. 32, 23 pp., illus., processed. Fisheries Research Board of Canada, Pacific Biological Station, Nanaimo, B. C., Canada, May 1954. Describes briefly the characteristics of the whales, porpoises, and dolphins of the north-east Pacific and Arctic waters of Canada and Alaska.

The Lobster Fishery of the Southern Gulf of St. Lawrence, by D. G. Wilder, General Series Circular No. 24, 16 pp., illus., printed. Fisheries Research Board of Canada, Atlantic Biological Station, St. Andrews, N. B., Canada, June 1954. The lobster fishery of the Maritime Provinces is by far the most important fishery to the shore fishermen. Lobsters are in very high demand and are readily caught, because they are largely restricted to shallow water. The fishery is continually in danger of overfishing by those interested mainly in quick financial returns. Proper management to make the best continuing use of this extremely valuable resource is of utmost importance to all those engaged in the fishery. Recent changes in the size limits for lobsters have stimulated a great deal of discussion and debate. Seldom, however, has it been possible for fishermen from different provinces or even from different parts of the same province to agree on the steps that should be taken to maintain and increase the catch of lobsters. The purpose of this circular is to review the situation to determine which of the lobster fishery regulations have real conservation value and what further steps should be taken to get even greater value from this fishery. Since sound management depends to a large extent on knowledge of the lobster itself, a brief review of its life history is given. Emphasis has been placed on the lobster canning areas in the southern Gulf of St. Lawrence.

(Louisiana) Fifth Biennial Report, Wild Life and Fisheries Commission, 1952-53, 182 pp., illus., printed. Wild Life and Fisheries Commission, 126 Civil Courts Building, New Orleans, Louisiana, 1954. A report of the activities of the Commission (successor to the Department of Wild Life and Fisheries), covering the calendar years ending December 31, 1952, and December 31, 1953. Includes individual progress reports and programs for expansion by each division of the Commission (including the Division of Commercial Seafoods, Division of Fish and Game, Division of Oysters and Water Bottoms) and a detailed analysis of the revenues from the fresh and salt-water commercial fisheries.

The Mani-jal of the Chilka Lake--A Special Net for Beloniform Fishes, by S. Jones and K. H. Sujansingani, 3 pp., illus., printed. (Reprinted from the Journal of the Bombay History Society, December 1952.) Central Fisheries, West Hill P. O., Calicut 5, Malabar, India.

Marine Fungi in Biscayne Bay, Florida. II. Further Studies of Occurrence and Distribution, by Samuel P. Meyers, 21 pp., illus., printed. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 3, no. 4, pp. 307-327, February 1954.) The Marine Laboratory, University of Miami, Coral Gables (University Branch) 46, Florida.

(Maryland) Annual Report, 1952, Department of Research and Education, by R. V. Truitt, Educational Series No. 31, 33 pp., illus., printed. (Reprinted from Ninth Annual Report, Maryland Board of Natural Resources, 1952.) Chesapeake Biological Laboratory, Maryland Department of Research and Education, Solomons Island, Maryland.

Maryland Board of Natural Resources, Tenth Annual Report, 1953, 180 pp., illus., printed. Board of Natural Resources, State Office Building, Annapolis, Md. This report covers the fiscal year beginning July 1, 1952, and ending June 30, 1953, and is divided into the following parts: Part I--Introduction; Part II--Activities of the Board; Part III--Departmental Reports; and Part IV--Conservation Budget. Part III describes the work of the five departments represented on the Board, including the Department of Tidewater Fisheries, the Department of Game and Inland Fish, and the Department of Research and Education. The Department of Tidewater Fisheries report discusses oyster production, new clam industries, crab production, fishery in general, law enforcement, and training and public relations. Tables are presented giving mostly 1952 data for oyster shells planted; seed oysters transplanted in 1951-1952; blue-crab catch; shellfish licenses issued; Chesapeake Bay commercial fish landings (catch by species by gear); Atlantic Ocean commercial fish landings (catch and ex-vessel value by species); and fish-net licenses issued. Also, a table is included showing a ten-year summary of Maryland's commercial fisheries. The Department of Game and Inland Fish report includes a discussion of the accomplishments in Maryland's inland fisheries; inland fishing conditions; inland fish work centers; cooperative projects; lake and pond management; Federal-Aid fishery projects; fish-stocking program; and progress in law enforcement. The Department of Research and Education report contains information on the hydrographic program; analysis of fish-catch records; and other investigations relating to oysters, finfish, crabs, marine fouling, and the Chincoteague Bay ecological survey project. Part IV reviews the 1953 conservation budget.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATIONS ISSUING THEM.

Maryland Commercial Fish Hatchery Operations, 1950-1951, by Coit M. Coker and T. Harvey Mister, Educational Series No. 33, 16 pp., illus., printed. Chesapeake Biological Laboratory, Solomons Island, Maryland October 1952.

Maryland Commercial Fisheries Statistics, 1946-1950, by Harry A. Hensel and Richard E. Tiller, Publication No. 94, 105 pp. (mostly tables), illus., printed. Chesapeake Biological Laboratory, Solomons Island, Maryland, November 1952. This bulletin is the second of a series begun in 1948, designed to present detailed records of the commercial fish catch of the State of Maryland. The statistics set forth were derived from records obtained only from licensed commercial fishermen, and contain no data pertaining to small unlicensed units of fishing gear, or to the sports fishery. Ninety-four to ninety-six percent coverage of licensed commercial fishing was obtained during the five years included in this survey, entirely on a voluntary basis.

Maryland's Natural Resources Inventory (A Three Year Progress Report), by R. D. Van Deusen, Educational Series No. 32, 28 pp., illus., printed. Chesapeake Biological Laboratory, Solomons Island, Maryland. Among the subjects discussed are the fresh-water fishery studies.

Notes on the Crab Fishery of the Chilka Lake, by S. Jones and K. H. Sujansingani, 8 pp., illus., printed. (Reprinted from the Journal of the Bombay Natural History Society, vol 51, no. 1, December 1952.) Central Fisheries, West Hill P. O., Calicut 5, Malabar, India.

"Parasites of Marine Fishes of the Miami Region," by Helen L. Ward, article, Bulletin of Marine Science of the Gulf and Caribbean, vol. 4, no.3, 1954, pp. 244-261, illus., printed. Marine Laboratory, University of Miami, Coral Gables (University Branch) 46, Florida.

"Pollution and the Fisheries," by A. L. Pritchard, article, Trade News, vol. 7, no. 1, July 1954, pp. 7-9, printed. Director of Information and Educational Service, Department of Fisheries, Ottawa, Canada. For all practical purposes, pollution in respect to fisheries may be defined as the addition of any substance to waters inhabited by fish which will limit their growth and/or decrease their survival. It is quite true, according to the author, that a few substances occur naturally which might be regarded as pollutants. Perhaps the hydrogen sulphide from underwater volcanoes, hot springs, or decaying vegetation is an example. Certain natural poisons occur in the food organisms of fish, which although they do not affect the fish, can be detrimental to human health. These natural substances are, however, so rare as to be of little real consequence in the over-all picture. The author describes the types of pollution affecting fish, preventative legislation, and procedures in combating pollution.

Probable Effects of a Size Change Upon the Lobster Industry, by Frederick T. Baird, Jr., Fisheries Circular No. 9, 11 pp., processed. Department of Sea and Shore Fisheries, Vickery-Hill Bldg., Augusta, Maine, January 1953. On December 1, 1951, the Commonwealth of Massachusetts increased the legal minimum size of its commercial lobster production to 3-3/16 inches which was to be followed in 1952 by a second increase to 3-1/4 inches. The Canadian Provinces agreed at the same time to follow suit. This proposed change was being made to make available to the market only lobsters of one pound or greater and thus reduce what appeared to be a hard to move commodity in the form of lobsters weighing less than one pound. This paper deals with the lobster-measuring program of the Department of Sea and Shore Fisheries. According to the author, it is difficult at present to determine the biological significance of any of this proposed size change. Certain figures and results which are obvious in the data indicate biological significance but until further tests are made they cannot be reported as fact. Among these indications are such things as average growth increment per shed during the life cycle spent in the commercial size range, and on the outcome of this will depend a second indication or that of natural and fishing mortality.

Quarterly Report on Fisheries Research (March 1954), 11 pp., processed. The Marine Laboratory, University of Miami, Coral Gables, Florida. A report of the work carried out for the Florida State Board of Conservation on the following research projects: mullet, shrimp, red tide, sailfish, blue crab, scallops, Lake Okeechobee outflow, fishing ear, and larval fishes and fish life histories.

Quarterly Report on Fisheries Research (June 1954), 8 pp., processed. The Marine Laboratory, University of Miami, Coral Gables, Florida.

Red Tide Studies, January to June 1954 (Preliminary Report to Florida State Board of Conservation), Report No. 54-19, 119 pp., illus., processed. The Marine Laboratory, University of Miami, Coral Gables, Fla., August 1954. A preliminary account is given of the results of red-tide investigations carried out during a 5-month period ending June 30, 1954, in behalf of the Florida State Board of Conservation. Presents a digest of the scientific literature on plankton blooms, statistical correlation of red-tide outbreak with meteorological and other phenomena, general hydrographic results, a discussion of the tidal influences in the hydrography of San Carlos Bay and Boca Grande Channel, chronological analysis of red-tide reports, summary of biological field observations, culture of Gymnodinium brevis, and a summary of the results of bacteriological studies. A general discussion of the results of the investigations and recommendations are also presented.

Regulation and Investigation of the Pacific Halibut Fishery in 1953, Report of the International Pacific Halibut Commission No. 21, 22 pp., illus., printed. International Pacific Halibut Commission, Seattle, Washington, 1954. A brief

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review of the Commission's activities during 1953 with reference to the preservation of the halibut fishery of the Northern Pacific Ocean and Bering Sea. In 1953 the Commission (formerly designated the International Fisheries Commission) continued the regulation of the halibut fishery and the statistical and biological investigations that form the basis for current and future regulations. This report also presents the historical background of the convention between Canada and the United States for the preservation of the Northern Pacific halibut fishery, the Halibut Convention of 1953, the 1953 regulations, statistics of the fishery, the fishery in special areas, catch per unit of fishing effort, composition of catches, and tagging operations in 1953.

Report to Congress on the Mutual Security Program (For the Six Months Ended June 30, 1954), 66 pp., illus., printed. Mutual Security Agency, Washington 25, D. C., 1954

On Some Metamorphosing Stages of Eels (Muraenidae) from the Estuary of the Burhabulong River, Orissa State, by V. R. Pantulu and S. Jones, 12 pp., illus., printed. (Reprinted from the Proceedings of the Indian Academy of Sciences, vol. XXXIX, 1954) Central Fisheries, West Hill P. O., Calicut 5, Malabar, India.

"A Study of Certain Chomogenic Bacteria Isolated from 'Red Tide' Water with a Description of a New Species," by Selwyn Jack Bein, article, Bulletin of Marine Science of the Gulf and Caribbean, vol. 4, no. 2, June 1954, pp. 110-119, printed. Marine Laboratory, University of Miami, Coral Gables (University Branch) 46, Florida.

A Survey of the Marine Nematodes of Chesapeake Bay, Maryland, by Richard W. Timm, Publication No. 95, 70 pp., illus., printed. Chesapeake Biological Laboratory, Solomons Island, Maryland, December 1952.

"Tagging Experiments on the Yellowtail, Seriola dorsalis (Gill)," by Robert D. Collyer, article, California Fish and Game, vol. 40, no. 3, July 1954, pp. 295-312, illus., printed. California Department of Fish and Game, 926 J Street, Sacramento 14, California.

The Tomcod (Microgadus Tomcod) as a Permanent Fresh-water Resident of Lake St. John, Province of Quebec, by Vianney Legendre and Robert Lagueux, 2 pp., illus., printed. (Reprinted from Canadian Field-Naturalist, vol. 62, no. 5, Sept.-Oct. 1948, p. 157, fig. 1.) Biological Bureau, Universite de Montreal, Montreal, Que.

The 1951 Alsea River Silver Salmon Tagging Program, by Alfred R. Morgan and F. C. Cleaver, Contribution No. 21, 30 pp., illus., printed. Fish Commission of Oregon, Portland, Oregon, June 1954.

(United Kingdom) Herring Industry Board, Nineteenth Annual Report for the Year Ended 31st March, 1954, 44 pp., printed, 1s.6d. (25 U. S. cents). Her Majesty's Stationery Office, London, England, 1954. Describes the composition and general functions of the White Fish Authority; and discusses the production of fish and shellfish, marketing and distribution, and research and training program. Appendices present data on distribution of trawlers by ports; age distribution of the trawler fleet; and assistance approved for rebuilding near- and middle-water and inshore fleets.

"Use of Otoliths for Determining the Age of Several Fishes from the Bering Sea," by Kenneth H. Mosher, article, Journal du Conseil, vol. XIX, no. 3, March 1954, pp. 337-344, illus., printed. Messrs. Andr. Fred. Høst & Søn, Bredgade, Copenhagen, Denmark.

"The Wonderful Properties of the Natural Sponge Against Its Different Technical Substitutes," by G. Kelaiditis, article, Aleia (Monthly Review of the Greek Fishwealth), no. 85, July 1954, 2 pp., printed. Aleia, Athens, Greece. Describes the difference between natural and artificial sponges. Numerous products have appeared on the market with the object of competing with the natural sponge and these products can be divided into three categories. The first contains the artificial product which is produced from the rejected pieces of sponge; the second comprises the artificial sponges made of rubber; and the third contains the sponges which are the result of chemical products of certain vegetable substances. To understand the actual difference which exists between the natural sponge and the three categories of artificial sponges, the natural and chemical composition was examined and through a comparison the quality was defined, based on three basic criteria: (1) degree of the porosity of the sponge; (2) degree of water absorption; and (3) degree of resistance during its different uses. According to the author, the natural sponge is unbeatable because of the smallness of its pores, its great powers of absorption, its elasticity, its wonderful softness, and its silky appearance.

TRADE LIST

The Office of Intelligence and Services, U. S. Department of Commerce, has published the following mimeographed trade list. Copies of this list may be obtained by firms in the United States from that Office or from Department of Commerce field offices at $1.00 per list:

Boat and Ship Builders, Repairers, and Chandlers - Netherlands West Indies, 4 pp. (August 1954). Lists the names and addresses, size of firm, and type of business of each firm. The report states that while there is limited construction of ships in the Netherlands West Indies, there is limited construction of small craft. Small vessels, mainly for fishing purposes, are imported.

INT.-DUP. SEC., WASH., D.C 70989

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SCHOOL LUNCH--A VOLUME MARKET FOR FISHERY PRODUCTS

According to latest available figures, there are nearly one million teachers in the 200,000 public schools in the United States with an enrollment of about 35 million students. It is estimated that by 1960 the student population of our public schools will reach nearly 45 million. The pattern of future living of these students will be conditioned and largely determined by their school experiences.

The Federal School Lunch Program is currently operative in about one-half of our schools. Of the 28.5 million pupils in schools participating in the Federal Program, nearly 10 million eat a school lunch in the school lunchroom every day of the school year. In addition, there are many school-lunch programs in private, public, and parochial schools operating independently of the Federal program. It has been estimated that lunches served in schools account for about 14 percent of our nation's public feeding load. In other words, better than one out of every eight meals eaten in a public place in the United States on any school day is eaten in school. Assuming that only one lunch per week per student included the minimum protein serving of 2 ounces of cooked fishery products, a total of 1,250,000 pounds of cooked fish would be required each week throughout the school year.

The experience gained from the Service's program of fish-cookery demonstrations for school-lunch personnel has shown that the managements and the patrons of the school lunches are overwhelmingly receptive to quality fishery products when tastily prepared and attractively served. This school year, fish-cookery demonstrations and educational information on fishery products are again being presented in a number of states.